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VI.—*Altitudes of Places in Kumaon.* By Capt. W. S. Webb, E.I.C.S.

A LIST of Latitudes, Longitudes, and Altitudes of many Places in Kumaon, has appeared in the 'Asiatic Researches,' presented to the Society by Lord Hastings, for whom a short Memoir of the Survey was drawn up in 1817, while the work was yet in progress. Perhaps this publication was premature; but be that as it may, it was clearly indicated in the memoir itself that two corrections would eventually be required; the one affecting *all* the longitudes, and the other *all* the *geometrically-deduced* elevations in that list.

The longitude of Péleebheet, as given by Mr. Reuben Burrow, $79^{\circ} 41' 45''$ E. was taken, *pro tempore*, as the first meridian of the survey, though well known to err in defect seven or eight minutes; and I take the present opportunity of mentioning that the correction in longitude $+ 8' 39''$, which has been adopted in the map, is applicable to all the longitudes given in the 'Asiatic Researches,' including Péleebheet.

In the second place, and which is more immediately connected with my present purpose, the altitude of Kasheepoor (upon which as the zero of my observations, all the geometrically-deduced elevations in the survey are based,) was assumed from a mere estimate to be 650 feet. But since then many barometrical observations have been made at that place, (as will be seen in the annexed Table,) the mean result giving 722 feet for the difference of elevation between Mr. A. Colvin's house at Calcutta, and the station at Kasheepoor. The heights inserted in the map have been thus increased seventy-two feet, the correction indicated, which is also due to every altitude, as given in the 'Asiatic Researches,' if obtained by *geometrical* process. The height of Mr. Colvin's house above the level of the sea, though probably not much less than 100 feet, has not been taken into consideration, and the altitudes given in the following Table are those above Calcutta.

Having been occasionally referred to upon the subject, it seems desirable to place the whole of the barometrical observations made in Kumaon upon record, that the traveller in the mountains may have an easy mode of access to them, whether merely to gratify his curiosity, or for any purpose of utility.

It was not until a late period of the survey that barometers in serviceable condition were obtained, though neither trouble nor expense were spared to procure them; all were broken upon the road, until, in April, 1817, being then in camp at Gungolee-Hath, I received from a friend a portable barometer by Ramsden. The instrument was originally intended for measuring such heights as occur in Great Britain. I managed, however, to get the scale lengthened downwards by a native workman; there was no contrivance for viewing the surface of the mercury in the reservoir from without, or of adjusting it to the beginning of the scale. The irregular form of the interior of the reservoir,—a cylinder having a broad and shallow cup at either extremity,—rendered it extremely difficult to be

gauged. Near the upper surface, 13 inches in the tube were equivalent to only $\frac{1}{10}$ of an inch in the reservoir.

It was subsequently ascertained, by comparison with a barometer of the best description, that the tube had been truly filled, and the scale precisely adjusted. All the observations, from No. 1 to No. 138, inclusive, were made with this instrument only, and must be considered *approximate* results. In computing the altitudes from these, no equation has been applied to correct the place of the zero point, and that usually added to the length of the column of mercury in the lower temperature (to compensate for expansion,) has also been omitted. The one being always additive to, and the other, almost without exception, subtractive from the *result*, have a tendency, *pro tanto*, to compensate for each other.

At the time these observations commenced, no corresponding series at Calcutta was procurable, I was, therefore, obliged to adopt the mean height of the barometer and thermometer at noon, for each month of the year, as inferred from the Meteorological Diaries, which had been formerly kept at the Presidency and published in the 'Asiatic Researches,' in lieu of correspondent observations. The variations to which these are liable in different years in Bengal are so small, that they might indeed be used without risk in all cases where very great accuracy is not required. The altitudes themselves, as far as subsequent observations made with better instruments show, appear to be generally a little in defect; but upon the whole, I am of opinion that the difference between the approximate altitudes here given, and those which could have been obtained by the best barometer, and more rigorous computation, all other things remaining the same, will rarely, if ever, exceed 100 feet.

In the spring of 1818, I obtained a supply of five barometers of the best description, and in perfect order from Europe. Four of them were constructed so as to admit of the adjustment of the zero point; and the fifth, a small instrument of Sir H. Englefield's pattern, required an equation of $\frac{1}{50}$ in lieu of that adjustment. Among the observations which follow, those marked (*a*) were made with the latter instrument exclusively, and the value of the equation just mentioned is included in the *last* column.

About this time I heard that Mr. Alexander Colvin, of Calcutta, kept a Meteorological Diary, and having made application to him upon the subject, he most kindly consented to supply me, monthly, with a copy. This gentleman's diary was kept with such undeviating regularity, and was transmitted to me during the residue of my survey with such punctuality, as to render it invaluable for my purpose; and his polite and liberal attention demands my grateful acknowledgment. I am also indebted to Major General Hardwicke for occasional extracts from his diary kept at Dum-dum.

Generally speaking, I have preferred taking the mean of the Calcutta observations for five days, to that immediately corresponding with my own. Thus, an observation made in the mountains on the 10th of any month, would be computed with the mean of those by Mr. Colvin on the 8th, 9th,

10th, 11th, and 12th. I feel convinced, that almost every instance, in which any material discrepancy appears in a result deduced from more than one observation, the error is attributable to the "Equation for Temperature," the theory being, I believe, generally considered imperfect.

In steady weather, series of observations gave the same results, as nearly as possible, though made at very different seasons of the year. But the continual travelling about, which the survey required, seldom permitted observations to be made in a continued series, and made it unavoidable to register a great number which were taken when the weather was unsettled. A fall of rain will often, in particular situations in the hills, depress the temperature 10 or 15 degrees in a few hours, a circumstance which does not occur in Calcutta, though similar weather be experienced, and this, if it be a lofty station, seriously affects the altitude. The barometer meanwhile seldom varies, as dependent upon rain or even snow, and any trifling alteration which may take place in that instrument, is often contrary to what might be expected from a diminution of temperature.

The unequal variations of temperature at places *within* the mountains, and near to each other,—if differing considerably in altitude,—is still more remarkable; and corresponding simultaneous observations at two such stations would give results fluctuating between extremes more widely removed, than would limit the differences apparent in the calculations if separately compared with the Calcutta observations. The tendency of the barometer to rise and fall (at every place where I have had an opportunity of observing it for several days together) appeared to me to correspond, almost precisely, and from day to day, with the Calcutta instrument; the *general changes* of temperature are analogous also. Such instances, as I have alluded to above, are to be considered as exceptions only.

Upon the whole I am of opinion that if a series of barometrical levels could be carried on step by step from the plains to the passes of the Himalaea, (which by the way would exclude all other business,) and with that account, unavoidably, every individual error accumulated from unequal variations of temperature, and a multiplicity of other causes, the ultimate object of inquiry would not be attained with nearly an equal degree of precision to that derived from comparing *directly* the last observation of the series with one correspondent at Calcutta. By the latter mode no error is extended to a second station; and, as the barometer in India is not affected by changes of weather, &c., as in places more distant from the Equator, and as its diurnal and annual variations in the hills correspond with those observed in Calcutta, the *distance* between the places of observation furnishes of itself no argument that I am aware of, unfavourable to the greatest accuracy which this instrument is competent to afford.

In such a multitude of figures there must inevitably occur many errors, and the more so, as not one of the results have been ever recomputed, or examined by a second person. The state of my health precludes me from executing now any extensive revision, and I can only express a hope that the inaccuracies may not prove unreasonably numerous.

COMPUTATION OF THE ALTITUDES.

The altitudes from No. 1 to No. 138 inclusive, have been computed according to a rule given in the pamphlet usually delivered with Sir H. Englefield's portable barometer, descriptive of the use and application of that instrument.

The residue are calculated by the formula contained in a small but useful publication, entitled 'A Companion to the Mountain Barometer,' by Mr. Thomas Jones, optician, of Charing Cross.

The following are a few examples of the latter class, given somewhat more at length. In every case, where it was possible to do so, the observation was delayed until the instrument had taken the temperature of the atmosphere; and in the Calcutta observations no registry of the detached thermometer is included.

Date.	Place of Observation.	Barom. Mean.	Therm.		Place of Comparison.	Barom.	Therm.
			A.	D.			
1818			°	°			°
Feb. 19	Kasheepoor (Factory)	29.048	70	70	{ Calcutta, Mr. Colvin's house }	29.85	73
,, 20	,, ,	·016	68	68	,, ,	·91	72
,, 21	,, ,	·168	68·5	68·5	,, ,	·94	78
,, 22	,, ,	·138	68	68	,, ,	·91	78
,, 23	,, ,	·109	66	66	,, ,	·96	80
	Mean .	29.096	68·1	68·1		29.914	76·2
			Centigrade 20°			Centigrade	24·5

B.	H.	A.	D.
29.914	929	24·5	24·5
29.096	..	20	20
+ ·026	..	4·5	44·5
29.122	1628	× 0058	22·2
	699	·290	3·0
	+ 66·6	·232	66·6
	765·6	·02610	

II.

At Keonlung, a halting ground, near Neetee Pass, mean of Two Days' Observation, on the 20th and 21st of August, 1818.—See No. 263.

B.	H.	A.	D.
29° 485	1,305.5	26° 1	26° 1
17° 542	..	11°	11° 7
° 050	..	14° 4	37° 8
17° 592	14,762	° 0035	18° 9
	13,456.5	720	57° 5
	1,086.75	432	945
	14,543.25	° 05040	1323
			945
			1086.75

Altitude of tent at Keonlung, 14,543 feet.

III.

August 21st, 1818, an Observation, at Crest of Neetee Pass, compared with the Barometer at Keonlung, one hour and a quarter afterwards.

	B.	H.	A.	D.
17° 542	14,837	°	12° 2	12° 2
16° 270	..	8° 3	8° 3	
° 013	..	3° 9	20° 5	
16° 283	16,778	° 0033	10° 25	
	1,941	117	8° 3	
	+85.08	117	3075	
Diff. Altitude =	+2,026.08	° 01287	8200	
Keonlung .. =	14,543.25	..	85° 075	
Altitude =	16,569.33			

Altitude of Neetee Pass, 16,569 feet. See No. 264.

IV.

Crest of the Pass compared with Major General Hardwicke's Diary.

B.	H.	A.	D.
29.51	1,283	28.5	28.5
16.27	..	8.3	8.3
.065	..	20.2	36.8
16.335	16,694	.0032	18.4
	14,411	404	65.9
	1,212.56	606	1656
	16,623.56	.06464	920
			1104
			1212.56

Altitude of Neetee Pass, 16,624 feet. See No. 265.

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V.

At Sireenugur Bungalow, 2d October, 1819. See No. 483.

	B	H.	A.	D.
Mr. Colvin's Observation =	29.75	1,072	.31.1	.31.1
	27.948	..	30	30
	.006	..	1.1	61.1
	27.954	2,695	.0056	30.5
		1,623	.00616	6.9
		+ 210.45		2745
		1,833.45		1830
				210.45

Altitude of Sireenugur Bungalow, = 1,833 feet.

VI.

The same Observation compared with one simultaneous at Paoree, the Altitude of which place, by mean of numerous Observations, is 5,238 feet.

	B.	H.	A.	D.
	27.948	2,701	30	30.
	24.685	..	20.6	20.6
	.046	..	9.4	50.6
	24.731	5,887	.0049	25.3
		3,186	846	13.6
		+344.08	376	1518
Below Paoree .. =		-3,530.08	.04606	759
Paoree =		5,238		233
		1,707.92		344.08

Altitude of Sreenugur Bungalow, 1,708 feet. See No. 482.

VII.

A tent near Chundurbudunee Temple, 6th, 7th, 8th, 9th, and 10th of October, 1819.

B.	H.	A.	D.
29.797	1,031	° 28.9	° 28.9
23.318	..	19.5	19.5
.044	..	9.4	48.4
23.362	7,371	.0047	24.2
	6,340	658	27
	653.4	376	1694
	6,993.4	.04418	484
			653.4

Altitude of tent, 6,993 feet. See No. 487.

VIII.

The same compared with simultaneous Observations at Paoree, on the 8th, 9th, and 10th October, 1819.

	B.	H.	A.	D.
Chundurbudunee	23° 306	7,433	20°	20°
Paoree.....	24° 765	..	18° 9	18° 9
	•005	..	1° 1	38° 9
	24° 770	5,846	•0050	19° 4
		+1,587	•00550	6° 7
		+129° 98		1358
Paoree ...		5,238		1164
		6,954° 98		129° 98

Altitude of tent, 6,955 feet. See No. 488.

ROUTES

During which the following Observations have been made with the Barometer to determine the Altitude of Places.

THE frequent recurrence of places bearing the same name, in Kumaon, would make it extremely difficult for a traveller to identify, in the map, those contained in the following list; many of them could not be inserted there at all for want of space; and the *prodigious number* of names (not easily legible in the original on account of the shading) which are rendered quite unintelligible in the engraved copy, greatly enhances this difficulty, which it is hoped the following clue to the routes, upon which they occur, may tend to diminish.

No. 1. Pokhuree, Lat. $29^{\circ} 39\frac{1}{2}'$ N., Long. $80^{\circ} 5\frac{1}{2}'$ E.

The route leads via Bagha Ling Temple, (12,) and proceeds into Juwahir along the course of the Goree R. to Milum, (36,) thence returning to Rañtee, (44,) turns westerly, crossing Surjoo R. at Soopee-Ford, (60,) SW. to Byznath and Runchoola, (77,) and by Gunna Nath, (83,) to Kaled Muth and Almora. From Kaled Muth E. to Chanee-Soopéh (92) and Sym-Deo, N. to Khuréh, returning by Doongralékh to Boodha-

Jagésur, (100,) Shem Deo, (111,) SE. by Jindee to Rameshur, (108,) thence returning by Chakhan to Almora. From Almora by Bandunee P. and Thath, (114,) thence SSW. through Beesjoola Purguna (not yet published) to Nanukmuth, (133,) in the Forest Péleebheet and Kasheepoor.

From Kasheepoor, (140, &c.,) by Nujeebabad, (176,) to Kotdwara Pass, (178-9,) Lungoor Fort, (182,) Muha Bulee Temple, (188,) Northward to Oonchakot, (198,) and the Nyar R., (134,) to Oolka, (209.) (Nos. 135, 136, 137, 138, will be found between the two last-named places, being misplaced in List.) The route proceeds to Sireenugur, (212,) crosses the Aluknunda R. through Sindooree, (213,) Agustmoon-dee, (219,) &c. to Kedar Nath, (228,) thence return by same road to Ookee-Muth, (235,) cross Toong Nath Ridge, (239,) by Gopésur, (242,) to Peepulkotee, (244,) and Josee Muth, (247,) a detour southerly by Pilgoénta Ridge, (250,) to Pana, (252,) back from thence to Toonghasee, (280,) and along the Dhoulee R. to Neetee Pass, (264.) Return by same road to Toonghasee, Josee Muth, (284,) Gopésur, (293,) W. to Nyl and S. to Déothula Temple, (299,) to Agur Peak, (303,) cross Ganges R. at Bumot, (306,) turn westward to Hureealee Temple, (310,) thence via Gopheer, (311,) and Bunraree Temple, (318,) to Oolka Gurh, (320,) Sireenugur, (321,) and south to Paoree, (322.) From Paoree ESE. to Kuneoor, (332,) SE. to Tamadhind (338,) and Boodha Kedar, (339,) westerly to Kulwaree, and along course of Sanee R. to Ooklét, thence by direct road to Kotdwara (355,) and the Plains. Re-enter the Hills at Kotdwara, and proceed thence by Bilkhét (388) on Nyar R. and Doomkot-Khal (397) to Paoree.

The next route commences with a circuit between Paoree, Oolka-Gurh, and Soomaree, proceed to Chipul-Ghat R. See Talgaon, (419,) SSE. from Oolka upon that stream. Various traverses upon upper part of Chipul-Ghat R. up to Bunas, (440,) thence the route turns E., passes through Sont, (444,) returning by a circuit to Bunas; thence in a direct line upon Roodur-Prag as far as Biraon, SW. to Déwulgurh, (468,) and by Soomaree (469) to Paoree (472 to 480.)

The next route commences from Sireenugur, (482,) via Chundurbudunee, (489,) to Deoprag, (492,) to confluence of Nyar R. with the Ganges, (495,) along the former stream to Bilkhét, (499,) and junction of Chipulghat R. turning NE. to Dhour-Boonga, (501,) NNW. to Doomkot, and thence again ESE. by Choundkot, and Guwanee, (513,) to Déba Temple, (518,) crossing Sanee R. about SbE. of the latter place to Tulaen, (520,) on Lukhor River, thence in nearly same direction to Bunduran, (524,) on Ramgunga R., and crossing the ridge separating that stream from the Kosee R., reach the latter river at Mohan, (525,) follow its stream to the Plains via Dhekulee, (526,) and on to Péleebheet, (531.)

Re-enter the Hills at Timla Pass, (535,) to Chumpawut and Fort Hastings, (541,) via Deo Dhoora, (542,) Birar and Jak, (545,) to

Hawul Bagh, (546.) Descend Kosee R. to Dhekulee, and by Kath-kee Nao, (557,) Choumoohn, (562,) and Reonee, (570,) to Kalee-Muth, (571,) thence to Nyathana, (574,) Dwara Hath, (576,) Doona Giree, (577,) onwards NNW. to Loba Gurhee, (581,) in same direction, to Khetee-Malsee, (582,) Chandpoor and Kurn-Prag, returning thence to Kirsal, and Dhunpoor Dobree, (591,) which terminates this tour.

Then follow some observations on the Plains, and on the lower part of the Kalee or Gogra R. to (No. 603.)

The next route begins at Dharee Rope Bridge, (605,) about six miles eastward from Sireenugur, ascending the Mundagnee R. as far as Naluhputun, (617,) returns eastward of that river to Suteear and Agur Peak, (628,) by Deothul Temple to the Ganges near Kundara, and westward of the river by Boorañsee Peak to Gopesur, (637.) Cross Aluknunda R. at Peepulkottee Bridge, along left bank of river to Kurn Prag, (642,) SW. by Chandpoor-Pindooalnee, (644,) Murora, (647,) to Kunoor, (649,) SSE. by Meldhar, (652,) to Jooneea Gurh, (657,) NW. to bank of Sanee R. near Dhaond, and descend with its stream to Pukholee, (665,) southward by Bhoun, (667,) to Kuman near Ram Gunga R. ; thence NW. to Kulwaree, and westerly by Seela (679) to Danda Mundee (680.) Trace course of Heoñla R. NW. to Timlee, (684,) returning to Keecha Gurhee, (692.) Cross Nyar R. at Murora Ghat, (695,) Situn Temple, Mujeen Temple, (706,) near Sireenugur, and thence by Keeark Temple (707) to Paoree.

To Talgaon on Chipulghat R. (bearing from Oolka Gurh SSE. six or seven miles,) and having ascended that stream NE. to Boonga, turn SSW. reaching Sanee R. at Kubura, (714,) near Kukhtoon, up the stream to Kulwaree, (716,) and confluence of Lukhor R. (718) with it at Pukholee. Eastwards along the former stream to Soongureea and Nagnee, thence S. to Khurgeéh Peak, (721,) confluence of Nyr R. with Ram Gunga (722) at Séra, up the Ram Gunga to Bikeea-kee-Syn, (725,) Boodka-Kedar and Masee Temple, (727,) back to Bikeea-kee-Syn, and ascend Ghugas R. to Teepoula, (729,) thence via Koomhpooor to Bañslee, (733,) by Somesur on Kosee R. to Byznath, (735,) to Chiringa on Pindur R., (736,) Budhan Gurh Fort, (737,) Koolsaree, (146,) Sirgoor Temple, (147,) Bugolee Seera, (148,) to Kurn Prag, (149,) the last four numbers being accidentally misplaced in the catalogue. No. 150 is on the Ganges about midway between Kurn Prag and Roodur Prag.

Nos. 151 to 163, both inclusive, are near Bhudree-Nath and Mana Pass to Tartary. Nos. 164 and 165, on Aluknunda R. (or Ganges.)

Nos. 166 to 174 will be found SW. of Almora in the direction of Roodurpoor.

APPROXIMATE ALTITUDES of PLACES and STATIONS in KUMAON, from Barometrical Observations made, during a Survey of that Province, by Capt. W. S. WEBB.

No.	Place of Observation.	Observation.		Comparison.		Approximate Altitude, Fathoms.	Equation for Temperature, Fathoms.	Absolute Altitude, in Feet.	Remarks.
		Barometer, Therm.	Therm.	Barometer.	Therm.				
1	Pokhuree (village)	25.39	75.5°	29.86	82°	704.27	80.25	4,707	G.* 4,784.
	Birgolee Ghat, on Rangunga R.	27.72	66.2	29.83	82	318.6	32.88	2,109	
	Koosael (village 80 ft. below tent)	26.28	77	29.81	85	547.37	65.44	3,677	
	Stream below Boonga (Baruh Bishoo P.)	25.65	75	29.81	85	652.75	76.44	4,375	
	Jumtar (village 60 ft. below tent)	25.33	76	29.81	85	707.27	83.7	4,746	
	Shera (village 70 ft. above tent)	26.07	81.2	29.81	85	582.21	72.73	3,930	
	Crest of Ghatee, between Shera and Shémar	24.56	68	29.81	85	841.34	91.35	5,596	
	Station near Mujgaon	24.633	77	29.81	85	825.35	98.67	5,544	G. 5,657.
	100 ft. above junction of Dokuhna N. with Rangunga R.	26.92	96	29.81	85	442.87	63.22	3,037	
10	Bulter (village)	26.81	89	29.81	85	460.65	61.81	3,135	
	Station above Nunpaph	24.0	74	29.78	87	937.14	110.9	6,282	
	Bagha Ling Temple	22.85	64	29.78	87	1,150.39	122.1	7,655	G. 7,718.
	Sath (village)	24.64	74	29.78	87	822.84	97.37	5,521	
	Dingathur Temple	25.78	73.2	29.78	87	626.42	73.75	4,201	{ G. 4,518. (?) By another barometrical observation, 4,190 ft.
	Mounshearee (station)	23.59	80.2	29.74	90	1,006.13	130.6	6,820	
	Do. do.	23.53	70.1	29.74	90	1,017.19	119.6	6,821	Mean altitude 6,799 ft.
	Do. do.	23.56	66.2	29.74	90	1,011.66	114.1	6,755	
	Renguleea, on Rangunga R.	27.12	83	29.74	90	400.51	53.26	2,723	
	Nachunee (village)	26.65	88.2	29.74	90	476.44	66.49	3,258	
	Tejuem, bridge on Rangunga R.	26.82	92	29.74	90	448.82	64.61	3,081	
	Girgaon (village)	23.80	80.2	29.74	90	967.64	125.6	6,559	
	Majkot (village)	25.75	88	29.74	90	625.64	42.76	4,276	
	Mangruleea (Bhoteea halting ground)	22.76	78	29.74	90	1,161.69	147.4	7,856	
20	Jym Ghar Bridge	25.07	87	29.65	87	728.71	97.79	4,959	

* The geometrical result.

Approximate Altitudes of Places and Stations in Kumaoñ.

No.	Place of Observation.	Observation.		Comparison.		Approximate Altitude, Fathoms.	Equation for Temperature, Fathoms.	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Therm.	Barometer.	Therm.				
30	Leepoo Kee Than (on Lesser Rung Ghar)	21.64	69	29.65	87	1,367.68	153.5	9,127	
	Dhurnalsu (on Lesser Rung Ghar)	22.56	72	29.65	87	1,186.96	137.6	7,947	{ Confluence with Geree R. 15 ft. below.
	Bridge over Greater Rung Ghar	23.39	57	29.65	87	1,029.95	100.5	6,783	
	Confluence Burgdwar and Geree Rivers.	22.51	77	29.65	87	1,196.5	146.05	8,055	
	Camp on Geree River above Snow	21.00	52	29.65	87	1,498.06	137.1	9,811	
	Reelakot (village)	20.37	50	29.65	87	1,630.34	145.2	10,653	
	Murtloee (village)	19.58	70	29.56	84	1,701.09	180.8	11,327	
	Bridge on Nundbejeh R.	20.45	59	29.56	84	1,600.11	154.2	10,526	
	Mapai (village)	20.49	63	29.56	84	1,677.24	169.8	11,082	
	Panchoo (village)	19.35	63	29.56	84	1,707.61	173	11,284	
40	Milum (village)	19.90	67	29.56	84	1,718.51	182.4	11,405	
	Milum Temple	19.71	67	29.56	84	1,760.17	186.8	11,682	
	Milum, bridge on Geree R.	19.96	69	29.56	84	1,705.13	185.1	11,343	
	Geree R. emerges from the Snow	19.77	63	29.56	84	1,746.97	176.9	11,543	
	Birjoo (village)	19.92	62	29.56	84	1,714.15	171.45	11,314	
	Boorpho (village)	20.28	65	29.56	84	1,636.36	169.65	10,836	
	Boorpho Spar bridge, on Geree R.	20.38	65	29.56	84	1,615.	167.5	10,695	
	Bridge on Sooring Ghar N.	25.55	68	29.56	84	633.13	67.97	4,207	
	Doomnur (village) Moonsheare P.	25.1	74	29.56	84	710.3	81.46	4,751	
	Raitee (village)	24.31	72	29.56	84	849.19	95.31	5,667	
50	Birneagan (village)	24.04	71	29.56	84	897.7	99.66	5,984	
	Bétoolee Ghat	21.57	63	29.56	84	1,368.34	138.6	9,043	
	Kalee Moonlee Ghat	21.49	582	29.56	84	1,384.08	132.6	9,104	
	Bridge on Jukkioña R.	25.14	66	29.56	84	703.39	73.8	4,663	
	Nakuree (village)	24.37	72	29.56	84	838.48	94.11	5,593	
	Water-mills on Ghut-Ghar N.	24.49	76	29.56	84	817.15	95.7	5,477	

Approximate Altitudes of Places and Stations in Kumaon.

No.	Place of Observation.	Observation.		Comparison.		Approximate Altitude, Fathoms.	Equation for Temperature, Fathoms.	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Therm.	Barometer.	Therm.				
60	Ranthee Temple	23.96	85°	29.56	84°	912.17	116.9	6,174	
	Bislaik Ghat	22.84	73	29.56	84	1,20.08	127.1	7,483	
	Hokura (village)	24.41	82	29.56	84	831.18	103.4	5,607	
	Hokura, bridge on Ramgunga R.	25.72	70	29.56	84	604.33	66.35	4,024	
	Ghōorureea, Dhar	23.9	76	29.56	84	923.06	108.1	6,187	
	Lethee R. (ford)	24.72	76	29.56	84	776.56	90.96	5,205	
	Lethee (village)	24.20	77	29.56	84	868.89	102.8	5,830	
	Goatherd's hamlet on Lour Dhoora	21.04	69	29.56	84	1,476.58	160.4	9,822	
	Lour (village)	23.28	72	29.56	84	1,037.21	116.4	6,922	
	Soopée (ford on Surjoo R.)	24.35	78 $\frac{1}{2}$	29.56	84	842.05	101.2	5,659	
70	Soopée (lower village)	23.91	73	29.56	84	921.24	104.5	6,154	
	Soopée (upper village)	23.47	74	29.63	84 $\frac{1}{2}$	1,012.19	116.7	6,773	
	Byznath (station)	26.27	75	29.74	85	538.81	63.22	3,610	
	Chour (village)	23.60	71	29.74	85	1,004.29	112.7	6,702	
	Kumēree (village)	23.78	70	29.74	85	971.29	107.8	6,475	
	Kuim (village)	23.72	65	29.74	85	982.26	103.1	6,512	
	Bughrur Temple	24.10	75	29.74	85	913.24	106.9	6,121	
	Guana Nath (Hustee Dhur's stockade)	23.55	71	29.81	85	1,023.71	114.9	6,832	
	Kalee Muth stockade (two days)	23.94	68	29.81	85	952.38	103.4	6,335	
	Upper Tolee (village)	23.91	72	29.74	85	947.61	107.5	6,331	
	Rutmatha Hill	22.51	68	29.74	85	1,209.66	131.4	8,046	
70	Jugthana (tent)	24.64	83	29.74	85	817.	103.7	5,524	
	Bysanee (village)	25.72	87	29.74	85	630.7	83.1	4,283	
	Lumchoola Ghat	23.24	74	29.74	85	1,071.05	124.1	7,171	
	Lumchoola (village)	25.02	70	29.74	85	750.54	83.31	5,003	
	Ojoola (tent above the village)	25.68	86	29.74	85	637.46	83.22	4,324	

Jugthana village 90 ft. below tent,
 (= 5,434 ft.

Approximate Altitudes of Places and Stations, in Kumaon.

No.	Place of Observation.	Observation.		Comparison.		Approximate Altitude, Fathoms.	Equation for Temperature, Fathoms.	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Therm.	Barometer.	Therm.				
80	Runchoola (temple in fort)	25.82	68°	29.74	85°	613.85	+ 66	66.66	G. 4, 106.
	Jintolee Churhaee	24.67	75	29.74	85	811.72	-	99.03	5,464
	Byznath Temple	26.33	75	29.74	85	528.9	-	61.94	3,545
	Bheta (village on bank of Mynol N.)	25.02	55	29.81	85	760.75	-	70.53	4,988
	Boodhulee Churhaee	24.26	60	29.81	85	895.43	-	88.47	5,903
	Bhyisurgaon (Taloookh Munsaree)	25.22	74	29.81	85	726.17	-	84.16	4,862
90	Reservoir near Gunna-Nah Temple	24.04	72	29.81	85	931.28	-	106.	6,242
	40 feet above Busolee (village)	25.43	82	29.81	85	690.16	-	84.76	4,650
	Kalee Math	23.89	67	29.81	85	961.46	-	103.2	6,388
	Col. Lyons' house, Almora	24.64	65 $\frac{1}{2}$	29.81	85	892.21	-	86.99	5,485
	Fort Moira	24.679	64	24.685	64	+1.06	-	.08	5,492
	Fort Almora	24.804	64 $\frac{5}{6}$	24.633	63	-30.05	-	2.33	5,291
95	St. Mark's Tower	24.673	67	24.534	71	-24.54	-	2.22	5,225
	Hawul Bach (house)	26.04	69	29.81	85	587.21	-	64.47	3,910
	Mount Browne (Almora)	24.399	69	23.774	67	-112.7	-	9.9	3,961
	Soopah (village) Chanee	25.40	80	29.89	85 $\frac{1}{2}$	693.28	-	86.1	5,626
	Dhoul-Cheena (tent) or Sym D \ddot{o}	24.16	73	29.89	85 $\frac{1}{2}$	924.29	-	106.55	4,688
	Khoonkhet (village)	26.66	78	29.89	85 $\frac{1}{2}$	496.66	-	60.29	3,342
100	Kurulagion (village) Reethaghar	26.19	76	29.89	85 $\frac{1}{2}$	573.91	-	68.27	3,853
	Khureh (station)	25.384	74 $\frac{1}{2}$	29.89	85 $\frac{1}{2}$	710.34	-	83.19	4,833.
	Raekholee (tent)	24.62	73	29.89	85 $\frac{1}{2}$	842.38	-	97.12	5,637
	Thurnolee (tent)	25.186	69	29.89	85 $\frac{1}{2}$	742.98	-	82.04	4,950
	Jagesur Temple	24.375	70 $\frac{1}{2}$	29.89	85 $\frac{1}{2}$	886.7	-	99.74	5,919
	Boodha Jagesur Temple	23.408	56	24.421	63	+ 183.45	-	12.31	+ 1,171

Correspondent observation at Jagesur Temple. Boodha Jagesur above Calcutta 7,090 ft.

Approximate Altitudes of Places and Stations in Kumaon.

No.	Place of Observation.	Observation.	Comparison.	Approximate Altitude. Fathoms.	Equation for Temperature, Fathoms.	Absolute Altitude, in Feet.	Remarks.
		Barometer. Therm.	Barometer. Therm.	°	°	+	
	Shem Deo Ridge	23.90	64	29.93	84	977.09	100.1
	Kootola (village)	24.35	69	29.93	84	896.08	97.30
	Khuk (station)	24.454	71	29.93	84	878.28	97.51
	Bhynsare Temple	25.784	76	29.93	84	646.56	75.73
	Dusoula-khet (on Shinees R.)	27.864	79	29.93	84	311.26	37.6
	Dhunekh Ridge	26.038	70	29.93	84	604.66	66.4
	Barukot (station)	25.034	68 $\frac{1}{2}$	29.93	84	776.46	83.84
	Raméshwar Temple, confluence Surjoo and Ramganga R.	28.431	78	29.93	84	223.3	26.7
110	Byra (upper fields of the village)	25.812	73	29.93	84	643.19	72.98
	Peepal tree in rice fields, on Kulsila R.	27.234	71	29.93	84	410.59	45.59
	Keemar (village)	25.253	67	29.93	84	738.46	78.38
	Kandé Temple (Salim station)	24.721	63	29.93	84	830.59	84.11
	Bujkunda (siliung tree)	25.73	69	29.93	84	656.67	71.3
	Thath (station)	24.224	66	29.93	84	919.33	96.45
	Shem-Deo Temple	23.631	60	29.93	84	1,026.43	100.2
	Onéona (village)	25.148	17.8	Centigr.	Centigr.	Feet.	6,760?
	Choukhoonta Temple	23.773	18.9	30.02	22.2	4,614	394
	Chooregarh (village)	25.031	15.5	30.06	21.7	6,115	530
	Soonee (village)	24.587	18.3	30.06	21.1	4,788	373
	Kurael (village)	25.972	22.8	30.08	21.1	5,237	441
120	Deogor Ghat	23.732	15	30.06	21.1	3,826	357
						6,160	473
						6,633	6,633

{ Hence computations made with new Tables.

G. 6,089.

G. 7,037. (?)

Another observation gives 6,194 ft. Hence Calcutta observations corresponding are used.

Approximate Altitudes of Places and Stations in Kumaon.

No.	Place of Observation.	Observation.		Comparison.		Approximate Altitude, Fathoms.	Equation for Temperature, .Feet.	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Therm.	Barometer.	Therm.				
130	Soonkot, Lower (village).....	25.478	17.8	30.04	21.7	4,292	362	4,654	
	Suleeane (village).....	25.884	20	30.07	21.7	3,906	347	4,253	
	Khureh (village).....	25.526	16.7	30.08	21.7	4,278	351	4,629	
	Bađi	24.678	16.1	30.09	21.1	5,067	402	5,469	
	Kēla-Ghat (on Beesjool N.).....	27.952	20	30.13	20.6	1,955	168	2,123	
	Bhinjur (tent)	26.837	18.9	30.13	21.1	3,016	258	3,274	{ The village about 100 feet higher { \equiv 3,374 ft.
	Khutolee (village).....	25.454	16.1	30.13	19.4	4,394	323	4,717	
	Tand (village).....	26.056	15.5	30.13	19.4	3,785	280	4,065	
	Loolan-Gurhee (Gorha stockade)	24.859	11.7	30.13	18.3	5,011	321	5,332	
	Doonga Peepul (on Oghuleea N.)	27.984	16.7	30.13	18.3	1,925	143	2,068	
	Kul-luga (a cattle station at foot of hills).....	29.214	23.9	20.13	19.4	804	73	877	In Turae.
	Nanuknath	29.398	18.9	30.06	20.5	581	49	630	See No. 595.
	Ford, Nyar R.	28.376	38	29.875	..	Fathoms.	Fathoms.		
	Birung (fields about 250 ft. below village).....	26.780	82	29.875	..	293.6	28.6	1,513	
	Juwara (village)	25.850	83	29.832	..	475	59.8	3,209	
	Mulooakhal	24.816	66	25.852	..	396.6	51.3	2,687	Corresponding Observation at Juwara. Height of Mulooakhal
	Koonjeth (tent)	25.782	80	29.832	..	177.6	17.1	1,168	{ above Calcutta = 3,856 ft. { The village about 90 ft. higher { \equiv 2,843 ft.

ALTITUDES of PLACES and STATIONS in Kumaoñ deduced from Barometrical Observations, made during a Survey of that Province, by Capt. W. S. WEBB.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Thermometers. Attached. Detached. Centigrade.	Thermometer.	Attached. Detached. Centigrade.				
139	Kasheepoor Factory, Bungalow.	○	○	○	○	○	○	○	○
	Mean of 4 days in February, 1818.	29.280	16.1	30.097	21.1	0.29	691	55.8	746.8.
Do.	4 do.	29.229	16.1	30.033	21.1	0.29	681.5	53.94	735.44
Do.	4 do.	29.222	20.6	30.005	22.2	0.09	681.5	62.06	743.56
Do.	5 do.	29.096	20.	29.914	24.5	0.026	699	66.6	705.6
Mean of the above observations in 1818									
Mean of 3 days' observation in January, 1819.									
	29.129	16.7	29.975	22.8	0.045	704.5	59.1	763.6	
Do.	5 do. in February, 1819.	29.145	20.	29.998	22.8	0.016	737	66.34	803.34
Do.	5 do.	29.131	21.7	29.908	26.1	0.026	663	66.92	729.92
Mean of the above observations in 1819									
Mean result of both years.									
	...	...	...	...	...	...	...	765.6	
	...	...	...	...	...	...	...	756.7	

The elevation of the factory Bungalow, at Kasheepoor, is thus computed to be 757 feet above Mr. Colvin's house, at Calcutta, where the corresponding observations were made: the station, whence altitudes of some of the snowy peaks were observed, is about 35 feet lower, or 722 feet.

A list of altitudes of many places in this survey has been published in the Asiatic Researches, in which the height of the station, at Kasheepoor, was assumed (from a general estimate of the declination of level to the sea) to be 650 feet; and upon that estimate, Kasheepoor being taken as the zero of my observations, all the *geometrical* altitudes in the survey are based. The barometrical result exceeds this estimate by 72 feet, which quantity must therefore be added to all the elevations given in the above-named list, which are geometrically deduced.

No allowance has been made for the height of Mr. Colvin's house above the sea, which is probably from 70 to 100 feet.

Altitudes of Places and Stations in Kumāṇ, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to collect Barom.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.	
		Barometer Attached.	Thermometers.	Barometer Detached.	Thermometers Attached.					
150	Koolsaree rope bridge, on Pindur R.	26.54	31.7 °	30.04	31.1 °	•016	3,227	433	3,733 (a.)	
	Sirgor Temple Bugroo-Seea rope bridge 50 ft. above Old Temple at Kurn Prag, junction of Pindur and Ganges Rivers Nugrasoo Temple	25.832 27.234	26.7 28.9	30.01 29.98	31.7 32.2	•018	3,891 2,485	488 323	4,467 (a.) 2,864 (a.)	
	Buroose-Chara	27.584	30.6	30.0	32.2	•009	2,180	292	2,521 (a.) See Nos. 165 and 642.	
	Bishun Prag (Peepul Tree), Confluence of Khrich R. Gundolee (village), Mana Bridge, Moosapanee (halting ground) do. Ghastolee do. Dhun-Rao do. Ratha-Kōond do. Do. compared with Calcutta (noon)	27.366 24.968 23.422 22.550 20.378 19.475 18.560 17.37 16.572 16.64	28.3 23.9 16.7 17.8 13.3 7.8 3.9 -2.8 -9.4 -10 1.7	30.03 29.99 29.9 24.968 29.98 29.96 20.350 20.375 19.475 18.560 18.560 17.37 16.572 16.64	32.2 32.2 29.4 23.9 29.4 29.4 23.9 29.4 28.9 6.1 5 4.4 0 0 -2.8 -9.4 -10 30.034	•021 •027 4.747 •031 •048 •064 •007 •004 +1.172 +1.241 +1.693 +1.222 +0.023 +0.022 +0.022 +0.090	2,401 4,747 -501 -501 7,365 9,962 -359 -359 +1.172 -7 -44 -50 -44 +15,246	308 540 43 43	2,763 (a.) 5,287 (This and following observations from Mr. Tate's Field Book. (C. O. at Buroose Chara, See No. 286.) 8,097 10,861 10,492 12,052 13,286 14,935 16,107 16,242	Supposed to be at least 1,000 ft. below summit of the pass. Barometer injured. C. O. at Ratha-Kōond.
	Jograo (halting ground)	15.855	-13.9	16.572	-10	-10	+1,133	-58	17,182	
	Bhudree Nath Temple	20.70	9.4	7.2	29.99	28.9	•080	9,560	10,294	

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet,	Remarks.
		Barometer.	Thermometers, Attached, Detached, Centi grade.	Barometer.	Thermometers, Attached, Detached, Centi grade.					
170	Pandkésur Temple	24.02	15.°	30.03	29.4	°	5,744	544	6,288	
	Nund Prag	27.12	18.9	29.96	23.9	29.4 .069	5,744	544	6,280	See No. 634.
	Kurn Prag (temple in village)	27.376	26.1	25.6	29.4	29.4 .018	5,659	233	2,587	See Nos. 149 and 642.
	Nyne Tal	23.915	7.2	7.2	29.97	26.7 .094	5,779	417	6,196	
	Bheem-Tal	25.735	24.4	24.4	29.95	29.4 .025	3,923	449	4,372	G. 4,343.
	Hunoaman-Köond	25.98	23.3	23.3	29.98	30.°	3,696	420	4,116	
	Luchnum-Köond	25.932	23.9	23.9	29.98	30.°	3,747	430	4,177	
	Nokoochea Tal	25.78	26.7	26.7	29.87	30.°	3,820	461	4,281	
	Mnloos Tal	26.435	29.4	29.4	29.95	32.8 .018	3,235	429	3,664	
	Ulmakhan (ridge of Ghagur above {Nyne Tal})	23.2	20.	20.	29.96	31.1 .05	6,607	719	7,326	
180	Kath-Godam	28.08	35.	29.82	30.6	30.6 .026	1,589	220	1,809	
	Seehaee Temple	23.20	23.3	23.3	29.86	31.1 .036	6,536	762	7,298	{Mr. Tate's observations end. G. 7,265.
	Sierkot	29.29	17.2	30.02	25.°	25. .046	601	53	654	
	Nujeebabad	29.129	18.3	18.3	30.03	23.3 .029	768	67	835	See Nos. 356 and 374.
	Jafurahad	28.97	25.	30.03	23.3	23.3 .010	945	96	1,041	See No. 375.
	Koldwara (Ford Koh R.)	28.607	23.3	23.3	29.98	23.3 .003	1,221	121	1,342	See No. 376.
	Koldwara (Tulseeldar's House)	28.413	24.4	24.4	28.569	25. .003	1,140	15	1,497	C. O. at the Ford.
	Dhoora kee Tal	25.873	21.7	21.7	29.98	23.3 .008	3,831	369	4,200	
	Churékh Ridge	25.021	22.2	22.2	29.93	24.4 .011	4,657	464	5,121	
	Lungoor Fort	23.904	18.9	18.9	29.947	27.2 .040	5,829	573	6,402	
	Do.	23.941	18.9	18.9	29.922	27.2 .040	5,767	566	6,333	
	Balee (village)	26.652	26.1	26.1	23.936	17.8 .040	-2,756	2584	3,353	C. O. at Lungoor Fort.
	Darmakhet	25.322	21.1	21.1	30.035	27.8 .034	4,412.5	461.2	4,874	
	Gurhseer Peepal Tree (40 ft. below tent)	26.302	21.7	21.7	30.03	27.8 .032	3,422	361	3,783	

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Barometer, Attached, Centi grade.	Thermometers, Attached, Centi grade.	Thermometers, Attached, Centi grade.	Equation for Approximate Altitude, in Feet, +	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer, Detached.	Thermometers, Centi grade.	Barometer, Detached.	Thermometers, Attached, Centi grade.							
190	Dhoora (station) near Ajmeer Temple.	24.137	8.9	29.966	12.8	27.8	0.064	4.513	411	4,924		
	Ajmeer Temple (Muhabulee T.)	24.364	8.9	25.039	12.8	0	0	4.691	32	5,647	C. O. at Dhoora.	
	Do. do.	24.454	15.	25.104	15.	12.8	0.019	+684	43	5,651	Do.	
	Observatory (tent)	25.108	15.	25.052	15.	15.	..	-58	3	4,863	Do.	
	Goaree (village)	27.050	23.9	30.01	28.9	28.9	0.027	2.681	301	2,982		
	Tent near Runchoola (station)	25.542	21.1	30.032	28.9	28.9	0.040	4.180	447	4,627		
	Do. do.	25.519	21.1	29.964	28.9	28.9	0.040	4.44	447	4,591		
	Runchoola (station)	25.304	16.7	25.395	12.8	12.8	0.020	+114	7	4,731	C. O. at Tent.	
	Phuldakot (tent)	25.732	21.1	25.365	12.2	12.2	0.045	-329	22	4,259	C. O. at Runchoola Tent.	
	Phuladot Peak	25.619	16.7	25.712	18.3	18.3	0.008	+86	5	4,350	C. O. at Tent.	
200	Koobunda-Sera (on Héona R.)	27.045	29.4	29.88	28.3	28.3	0.007	2.603	320	2,023		
	Onchhakot (tent)	25.653	22.8	22.8	28.9	28.9	0.031	3.943	433	4,376		
	Phaisa-Khal (tent)	24.618	22.2	22.2	29.87	28.3	0.030	0.007	539	5,546		
	Do. Peak	24.472	15.	24.590	20.	20.	0.024	+9.9	7	5,652	C. O. at Tent.	
	Bureih (80 ft. below village)	25.437	19.4	19.4	29.88	28.9	0.048	4.145	427	4,572		
	Nogarh Peak	24.113	18.9	18.9	29.88	28.9	0.048	5.536	578	6,114		
	Huthnoura Temple	27.079	27.8	27.8	29.875	29.4	0.009	2.551	312	2,863		
	Kunoule (tent)	23.385	18.9	18.9	29.825	31.1	0.057	6.274	676	6,944		
	Ooika (tent)	23.57	21.7	21.7	29.872	31.7	0.047	6.123	697	6,820		
	Do. do.	23.563	20.6	20.6	29.897	31.1	0.049	6.150	677	6,827		
	Do. do.	23.544	20.	20.	29.895	30.	0.047	6.171	660	6,831		
	Do. do.	23.495	16.7	16.7	29.845	31.1	0.068	6.158	629	6,787		
Mean of the above .....		..	..	..	..	..	..	..	..	..	..	6,816
Oolka (tree in the upper fort)		23.421	15.6	15.6	23.506	15.6	..	+95	6	6,918	C. O. at Tent.	

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Equation for Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.	
		Barometer Attached.	Thermometers, Centi grade.	Barometer Detached.	Thermometers, Attached.						
210	Soomaree Temple	23.133	22.5	22.8	29.772	31.1	31.1	0.041	4,372	503	4,875 See No. 469.
	Soomaree Station (tree)	25.259	17.8	25.071	17.8	17.8	17.8	0.03	-195	14	4,666 C. O. at Temple.
	Sireengur (Bungalow)	27.907	30.6	30.6	29.69	31.1	31.1	0.003	1,611	211	1,822 See Nos. 321, 482, 483.
	Sindooree (village)	26.778	32.8	32.8	29.689	31.7	31.7	0.006	2,694	371	3,065
	Dharkot (120 ft. above village)	25.423	31.1	31.1	29.689	31.7	31.7	0.003	4,039	543	4,582
	Soura (80 ft. below village)	24.503	27.8	27.8	29.678	32.2	32.2	0.022	4,969	636	5,605
	Sukneana (about 120 ft. above village)	24.277	27.8	27.8	29.673	32.2	32.2	0.022	5,210	667	5,877
	Pokee-Khal	25.695	31.1	31.1	29.688	32.2	32.2	0.006	3,758	506	4,264
	Sooreh-Khal	25.722	31.1	31.1	29.688	32.2	32.2	0.006	3,730	506	4,236
	Agastmoondee (tent) near Temple	27.041	35.6	35.6	29.688	32.2	32.2	0.020	2,450	356	2,806 See No. 612.
	Chundrapoor Temple	27.023	35.	35.	29.688	32.2	32.2	0.016	2,464	353	2,817
	Tenneera (village)	26.384	28.3	28.3	29.687	32.2	32.2	0.021	3,052	393	3,445
	Naluhputun (about 70 ft. above temple)	25.164	29.4	29.4	29.687	32.2	32.2	0.014	4,292	567	4,859 See No. 233.
	Mykhinda (village)	24.538	25.	25.	29.706	32.2	32.2	0.035	4,942	603	5,545 See No. 232.
	Ukrotkotee (do.)	24.121	26.7	26.7	29.706	32.2	32.2	0.026	5,397	679	6,076 See No. 230.
	Gouree Koond (tent)	23.412	22.8	22.8	29.79	31.7	31.7	0.042	6,232	726	6,958 C. O. at Tent.
	Gouree Koond (hot well)	23.620	17.8	17.8	23.337	18.3	18.3	0.002	-316	23	6,619 See No. 229.
	Bheem Odeear	21.881	17.8	17.8	29.75	31.7	31.7	0.061	7,933	837	8,770
	Kedar Nath (porch of temple)	19.642	12.8	12.8	29.76	32.2	32.2	0.076	10,725	1,03051117555	1,03051117555
	Bheem Odeear	21.884	20.	20.	29.73	31.7	31.7	0.051	7,923	872	8,795 See No. 277.
	Gouree Koond (tent)	23.375	25.5	25.5	29.72	31.7	31.7	0.029	6,225	761	6,986 See No. 225.
	Jhilimilputun Bridge	24.355	16.7	16.7	29.69	31.7	31.7	0.073	5,083	525	5,808
	Ukrotkotee (village)	24.063	28.9	28.9	29.69	31.7	31.7	0.013	5,461	706	6,167 See No. 224.
	Mykhinda , , , ,	24.593	15.5	15.5	29.67	31.1	31.1	0.076	4,810	478	5,288 See No. 223.
	Naluhputun	25.184	27.2	27.2	29.65	30.5	30.5	0.016	4,238	530	4,768 See No. 617.

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Thermometers Attached.	Barometer Deutsch. Centigrade.	Thermometers Attached. Centigrade.	Equation for Expan- sion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temper- ature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer	Thermometers.	Barometer	Attached.								
260	Jelum	°	°	°	°								
	Neetee Village (five days)	21.402	16.7	29.64	28.9	°	°	°	°	810	9,232	See No. 273.	
	Khurzon (Halting ground)	19.828	20.	29.557	29.4	°	°	°	°	1,094	11,446		
	Gothing Pasture (30 ft. above Dhoulie R.)	19.425	22.2	19.832	22.8	0.02	0.02	0.02	0.02	10,352	12,035	C. O. at Neetee.	
	Glidoong (halting ground) three days	18.882	23.3	29.56	29.4	0.23	0.23	0.23	0.23	537	52		
	Glidoong (halting ground) three days	17.407	12.8	29.52	29.4	0.57	0.57	11,647	11,647	1,307	12,554		
	Keonlung (, , ,) two days	17.542	11.7	29.486	26.1	0.50	0.50	13,679	13,679	1,240	14,919		
	Neetee Pass (the pile of stones)	16.270	8.3	17.542	12.2	0.13	0.13	13,456	13,456	1,087	14,543		
	The same with Calcutta (Col. Hardwicke)	16.270	8.3	29.51	28.5	0.65	0.65	15,411	15,411	1,213	16,624		
	Neetee Pass (extremity of tongue projecting northward)	16.328	12.8	16.270	8.3	°	°	°	°	16,369	16,369		
270	Confluence Khurbusea and Dhonlee Rivers	18.341	17.8	29.562	28.9	0.41	0.41	12,380	12,380	1,233	13,613		
	Neetee Village (six days)	19.841	18.9	29.658	29.4	0.42	0.42	10,420	10,420	1,072	11,492		
	Do. do. (six days)	19.855	16.7	29.728	28.9	0.49	0.49	10,454	10,454	1,019	11,473		
	Phurkeea	20.458	18.9	29.718	28.3	0.39	0.39	9,678	9,678	977	10,655		
	Mularee	20.812	20.6	29.716	28.3	0.32	0.32	9,240	9,240	964	10,204		
	Spar Bridge on Doulee R.	21.274	16.7	20.812	20.6	0.17	0.17	-593	-593	46	9,564		
	Jelum	21.425	24.4	29.718	28.3	0.17	0.17	8,505	8,505	955	9,460	See No. 258.	

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Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Thermometers.	Attached.	Barometer.					
	Spar Bridge on Dhonee R. (3 spars).	21.534	21.7	21.425	24.4	.012	-147	14	9,299	{ C. O. at Jelum. This bridge is between Mulaee and Jelum.
	Suntungentha.	23.058	22.8	29.712	28.3	.025	6,578	717	7,295	See No. 256.
	Spar Bridge on Dhonee R.	22.724	15.6	23.058	22.8	.033	+332	27	7,654	{ C. O. at Suntungentha. This bridge is near Icham.
	Do. do. on Reendee R.	23.636	16.7	29.706	28.3	.055	5,829	560	6,389	
	Do. do. on Ringee R.	23.956	20.	23.696	16.7	.016	-288.	20	6,101	C. O. at Reendee Bridge.
	Toonghasee Village (two days)	22.307	16.7	29.68	27.8	.050	7,382	699	8,081	
	Do. do. (six days)	22.424	15.6	29.842	28.9	.060	3,377	699	8,076	
	Do. do. (six days)	22.431	18.3	29.805	28.9	.048	7,331	741	8,092	
	Mean of the above ....	...	...	...	...	...	...	...	8,083	
280	Mergh (Punchukee)	22.858	19.4	29.766	29.4	.046	6,828	710	7,538	
	Josee Math (tent)	23.991	23.9	29.77	27.2	.016	5,606	612	6,218	See No. 247.
	Josee Math (station)	22.031	19.4	29.807	29.4	.044	7,825	815	8,640	
	Josee Math Nur-Sing Temple.	24.072	17.8	24.026	19.4	.008	-539	4	6,155	C. O. at Tent.
	Bishun Prag (Spar bridge)	25.239	22.8	21.7	23.958	.005	-1,362	126	4,730	Do. do. See No. 152.
	Road crosses Pignaon R.	23.811	24.4	24.4	29.80	.019	5,826	655	6,481	See No. 246.
	Punkhee Math Temple	25.343	27.8	27.8	29.80	.003	4,219	504	4,723	
	Bridge on Putal Ganga R.	25.464	15.6	25.343	27.8	.062	-157	17	4,519	C. O. at Punkhee Math.
	Peepulkote (fields of)	25.639	22.8	22.8	29.81	.037	3,860	438	4,328	See Nos. 244 and 638.
	Doongree (80 ft. below village)	24.928	25.6	25.6	29.87	.019	4,633	553	5,246	See No. 639.
290	Peepulkote Bridge	26.424	14.4	24.928	25.6	.059	-1,577	134	3,535	{ C. O. at Doongree Tent. See No. 248.

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet.	Absolute Altitude, in Feet.	Remarks.
		Barometer, attached.	Thermometers, Centigrade.	Barometer, Detached.	Thermometers, Attached.					
300	Gopésur Temple (about 100 ft. above temple)	25.203	25.6	25.6	29.87	29.4	.019	4,408	517	4,925
	Bridge and Punchukée on Bai-Ganga R.	25.460	19.4	18.3	29.87	29.4	.051	4,111	419	4,530
	Kandé (30 ft. below village)	24.512	24.4	24.4	29.87	29.4	.024	5,126	589	5,715
	Bunghéla (tent)	21.855	18.9	18.9	29.87	29.4	.046	8,087	831	8,918
	Bunghéla (station)	21.736	8.9	21.830	11.1	11.1	.010	+99	4	C. O. at Tent.
	Jourasee	25.115	23.3	23.3	29.87	29.4	.030	4,487	502	4,989
	Déothula Temple (two days)	24.017	23.3	23.3	29.87	29.4	.029	5,652	636	6,288
	Choundee (about 100 ft. above village)	25.224	22.2	22.2	29.87	29.4	.036	4,369	480	4,849
	Muhur Temple (25 ft. below temple)	25.015	22.8	22.8	29.87	29.4	.033	5,584	512	5,400
	Agur Camp (three days)	23.176	17.2	17.2	29.92	29.4	.056	6,593	657	7,250
	Agur Peak	22.590	12.8	12.8	23.103	9.4	.016	+603	28	C. O. at Camp. See No. 628.
	Hisala	25.832	25.6	25.6	29.93	29.4	.020	3,817	448	4,265
	Bumot (20 ft. below village)	27.228	23.9	23.9	29.95	29.4	.030	2,454	279	2,733
	Do. rope bridge on Alukunda R.	27.592	11.7	11.7	27.228	23.9	.067	-409	30	2,294
	Kandé (about 160 ft. above village)	25.144	23.3	23.3	27.184	27.8	.022	+2,010	217	4,960
310	Tulear (25 ft. below village)	24.986	22.8	30.025	30.	.036	4,749	536	5,285	
	Hurealee (tent)	23.019	12.2	12.2	24.986	22.8	.049	+2,082	156	7,523
	Hurealee Temple	21.346	8.3	8.3	22.998	7.2	.005	+1,947	64	9,534
	Gopheer (about 60 ft. below village)	24.542	18.9	18.9	29.978	28.3	.046	5,164	519	5,683
	Goar (about 80 ft. above village)	24.369	16.1	16.1	29.977	27.8	.057	5,335	499	5,834
	Doongra (village)	24.550	16.7	16.7	29.95	27.8	.055	4,702	446	5,148
	Burjakhine Ghat	23.499	10.6	8.9	24.976	18.3	.036	+1,548	90	6,786
	Ford on Buchuu Gudh R.	26.312	15.	13.9	24.976	18.3	.017	-1,375	95	3,678
	Pithondee-Khal	23.155	16.7	13.3	29.94	28.3	.053	6,636	591	7,227
	Chopura Tait (two days)	23.567	17.8	17.8	29.94	27.2	.044	6,188	594	6,782

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Attached.	Thermometers.	Attached.					
320	Chopura Station (Burrao Temple) ..	23.403	12.2	11.7	23.55	11.1	°	+169	18	6,959 C. O. at Tent.
	Khursoo-Syna (Deota's Than)	24.420	18.3	18.3	30.	27.2	0.044	5,316	515	5,831
	23.613	15.6	15.6	30.05	27.2	0.045	6,221	569	6,790	
	Oulta Camp (same ground)	23.613	19.4	19.4	30.032	26.7	0.042	1,621	159	1,780
	Sireenugur Bungalo	28.279	19.4	19.4	30.032	26.7	0.042	1,621	159	C. O. at Sireenugur. See Nos. 400, 472-481, inclusive; also No. 522.
	Paore (village)	24.942	18.3	18.3	28.251	20.	0.08	+3,238	264	5,281
	Nishnumee (about 60 ft. below village) ..	25.344	17.2	17.2	30.03	26.1	0.45	4,375	404	4,779
	Bopba-Khal	24.392	11.7	10.6	25.344	17.2	0.27	+909	57	5,805
	Chopurecon (30 ft. below village)	25.372	21.7	21.7	30.	25.	0.17	3,811	382	4,223
	Blynssoora-Khal	23.834	11.1	10.6	25.853	21.1	0.48	+2,007	139	6,429
330	Bidolee 780 ft. below village)	26.164	19.4	19.4	30.	25.	0.29	3,536	335	3,871
	Chinpal-Ghat (Peepul Tree)	26.138	20.6	20.6	30.	25.	0.23	3,271	319	3,910
	25.090	19.4	19.4	30.005	24.4	0.25	4,635	434	5,069	
	Synjee (Dak Hat)	23.544	21.1	21.1	30.01	24.4	0.14	6,308	611	6,919
	Kutuolee (lower houses)	22.558	9.4	8.9	23.544	21.1	0.53	+1,054	675	8,040 C. O. at Kufurolee.
	Punjik-Khal	24.245	19.4	19.4	30.02	23.9	0.22	5,543	512	6,035
	Kuneor (about 150 ft. below village) ..	24.732	1.1	0.	24.25	6.7	0.28	-542	8	5,505 C. O. at Kuneor Tent.
	Ford on Sanee R.	24.65	20.	20.	30.03	23.9	0.19	5,124	480	5,604
	Khundea-Khal	22.824	13.9	12.8	24.65	20.	0.28	+1,974	138	7,715 C. O. at Mason Tent.
	Chouthan (Dak Hut)	25.512	20.6	20.6	30.026	23.9	0.17	4,228	400	4,628
340	Osturala (Dak Hut on Chouthan R.) ..	26.634	19.4	19.4	30.022	23.9	0.24	3,097	285	3,382
	Tamadhond (Dak Hut)	27.130	20.	20.	30.028	24.4	0.24	2,621	249	2,870
	Boddha-Kedar Temple	27.323	20.6	20.6	30.025	24.4	0.21	2,437	234	2,671
	Kuman (village)	26.439	16.7	16.7	29.99	25.	0.04	3,240	287	3,527
	Naginee (village)	25.019	20.	20.	30.	25.6	0.28	4,702	458	5,160

Altitudes of Places and Stations in Kumaoñ, deduced from Barometrical Observations.

No.	Place of Observation,	Observation.		Comparison.		Equation for Expansion + to collect Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Thermometers.	Barometer.	Attached. Detached.					
		Barometer. Attached.	Thermometers. Detached.	Barometer.	Attached. Detached.					
		Centigrade.	Centigrade.	Centigrade.	Centigrade.					
	Jaeraj-Khal.	23.935	14.4	12.2	25.019	0.	20.	.026	+1.126	77
	Tulaen (village)	26.024	20.6	20.6	30.006	25.	.023	3,687	358	4,045
	Punas (lower village)	23.832	13.9	13.9	30.035	25.	.052	3,875	314	4,189
	Kanda (village)	25.52	17.2	17.2	25.832	13.9	.017	+334	22	4,545
	Kundoolee-Khal.	24.362	13.9	13.9	30.036	23.9	.049	5,402	437	5,839
	Kola (village)	26.060	22.2	22.2	24.362	13.9	.041	-1,712	131	3,995
	Jula kee Syna (35 ft. above Sanee R.)	27.119	15.6	14.4	26.060	22.	.036	-1,072	84	2,838
	Toole (40 ft. above village)	25.557	11.7	11.7	27.119	15.6	.144	+1.526	84	4,449
	Choumasao (lower village)	27.823	18.3	18.3	30.06	22.2	.022	1,993	172	2,165
	Choumasao (ford, Sanee R.)	28.128	7.8	6.7	27.80	18.3	.059	-360	19	1,786
	Deodalee (village)	26.036	15.	15.	27.78	16.7	.009	+1,680	112	3,957
	Goorna-Khal.	25.145	3.9	3.9	26.036	15.	.055	+851	35	4,843
	Merooa (village)	26.658	18.9	18.9	26.036	15.	.020	-595	42	3,320
	Koh R. (halting ground in wood)	27.703	18.9	18.9	30.075	21.7	.016	2,125	183	2,308
	Nujeebabad (Brose and tomb)	29.161	18.9	18.9	30.05	21.7	.016	768	65	834
	Nugeena (Mr. Chalmers's house)	29.206	20.6	20.6	30.098	21.7	.006	779	70	849
	Dhampoor.	29.348	22.8	22.8	30.13	22.2	.004	689	65	754
	Seohara, or Soohara.	29.404	20.	20.	30.154	22.	.013	645	57	702
	Guuhee	29.440	23.3	23.3	30.158	22.2	.007	633	57	695
	Sunduleepoor-Matpoor.	29.408	19.4	19.4	30.15	22.2	.017	634	56.2	691
	Moradabad.	29.404	22.2	22.2	30.108	22.2	..	616	58	674
	Peepsanda.	29.380	23.9	23.9	30.074	22.	.010	618	60	678
	Kuchnar.	29.265	20.	20.	30.052	22.2	.013	680	61	741
	Belawala.	29.240	21.1	21.1	30.022	22.2	.006	683	63	746
	Kaseepoor-Soot.	29.206	19.4	19.4	29.972	21.7	.013	664	57	721
	Khuleelpoor.	29.4	22.2	22.2	30.042	21.1	.007	569	52	621

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for expansion + to coldest Barom.	Equation for Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer, AttACHED.	Thermometers, DetACHED.	Barometer, AttACHED.	Thermometers, DetACHED.					
370	Futtelguj	29.428	23.3 °	30.042	21.1 °	013	549.5	51	600.5	{ See No. 366. Mean altitude 752 ft.
	Hörhöree	29.466	22.2 °	30.042	21.1 °	007	511	47.5	558.5	
	Dhunalee (second)	29.418	22.8 °	30.07	22.2 °	004	57.5	56	631	
	Kumora-Dhumora	29.464	26.1 °	30.066	22.8 °	022	546	56	602	
	Burhepoor	29.372	21.7 °	30.066	22.8 °	006	603	55.5	658.5	
	Kaseepoor-Soor	29.266	24.4 °	30.066	22.8 °	010	711	71	782	
	Nujeebabad (grovE)	29.059	28.9 °	29.913	27.8 °	007	761	90.5	851.5	
	Jafurabad	28.814	28.9 °	29.90	28.3 °	004	968	117	1,085	
	Kotdwara (ford)	28.607	29.4 °	29.88	28.3 °	007	1,131	141	1,272	
	Jooce (hamlet)	27.564	23.3 °	21.1 °	28.607	29.4 °	034	+ 936	101	1,307 ft.
380	Phoolinda (village)	26.230	25.6 °	23.3 °	27.564	23.3 °	013	+ 1,305	122	2,344 C. O. at Kotdwara Ford.
	Chunda (tent)	25.468	23.9 °	23.9 °	29.897	28.3 °	022	+ 4,155	465	3,771 C. O. at Jooce.
	Chunda-Khal	25.009	16.7 °	15 °	25.468	23.9 °	036	+ 4,436	35	5,090 C. O. at Chunda Tent.
	Danda Mundee (Kheema Nund's house)	27.089	20.3 °	20.3 °	29.93	28.9 °	046	+ 2,535	268	2,823 See No. 680.
	Chumnea-Khal	25.670	13.3 °	12.2 °	27.098	20 °	034	+ 1,377	95	4,295 C. O. at Danda Mundee.
	Désa, 30 ft. above village	25.575	23.3 °	23.3 °	29.93	28.3 °	026	+ 4,07	449	4,520
	Tent in the wood	25.894	25.6 °	25.6 °	29.916	28.9 °	017	3,745	435	4,180
	Dooaree-Khal	24.764	12.8 °	12.2 °	25.894	25.6 °	064	+ 1,095	89	5,364 C. O. at tent.
	Bilkhet Ford, Nyar R.	28.164	23.9 °	22.8 °	25.814	25.6 °	010	- 2,280	235	1,165 C. O. at do.
	Do. Mango tree	28.051	23.3 °	23.3 °	29.912	28.9 °	031	1,646	183	1,529 { C. O. at Mango tree. See No. 499.
	Do. village	27.890	26.1 °	25.6 °	27.956	28.3 °	012	+ 51	3	1,882 { C. O. at Mango tree. See No. 499.

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet.	Absolute Altitude, in Feet.	Remarks.
		Thermometers.	Barometer, Attached, Detached, Centi grade.	Thermometers.	Barometer. Attached. Detached. Centi grade.					
390	Sakinee.....	25.85	25	25	29.918	28.9	.020	3,788	433	4,221
	Bunekh-Khal.....	24.487	17.2	21.7	25.850	25	.040	+328	27	4,772
	Gidurasoo (15 ft. above village).....	24.698	21.7	21.7	29.904	28.9	.035	4,948	534	5,482
	Sakinee (2d).....	25.752	15	13.3	24.698	21.7	.035	-1,124	84	4,274
	Asooee (village).....	25.047	17.8	16.7	24.698	21.7	.019	-385	31	5,066
	Doongra.....	24.852	18.9	16.7	24.698	21.7	.014	-177	15	3,289
	Doongra-Khal.....	24.600	20.6	20	24.698	21.7	.005	+98	8	5,588
	Bungargao.....	25.052	24.4	24.4	29.92	28.3	.019	+608	515	5,123
	Doomkot-Khal.....	24.248	13.3	11.7	25.058	24.4	.053	+830	63	6,016
	Teeka Kee Manda.....	24.042	13.3	13.3	24.962	6.1	.036	+1,017	42	6,182
	Faoree (tent).....	24.735	17.8	17.8	29.819	29.4	.058	+4,810	484	5,294
400	Do. Bungalo.....	24.871	10	10	24.83	10	..	-44	..	5,250
	Bithuee (village).....	26.27	18.8	16.2	24.83	10	.044	-1,423	79	3,762
	Ford on Goree R.....	27.348	24.0	23.4	24.83	10	.070	-2,444	174	2,624
	Sirkot (village) 40 ft. below village.....	27.108	27.2	27.2	24.836	19.6	.038	-2,241	225	2,779
	Bugolee (village).....	25.656	18.7	17.6	27.083	27.3	.044	+1,366	130	4,305
	Kuthoor (village).....	26.064	21.7	21.7	27.083	27.3	.029	+970	103	3,873
	Kumera Temple.....	26.434	22.4	21.2	27.083	27.3	.026	+606	60	3,449
	Churraon (village).....	26.561	14.3	27.020	12.3	9.6	.016	+462	29	3,279
	Buchalee (village).....	27.368	18.6	18	27.020	12.3	9.6	.034	-309	16
	Junction of Sirkot and Goree Rs.....	27.482	22.7	20.6	27.059	22.7	..	-405	37	2,328
	Kote (upper village).....	26.628	25.8	24	27.083	27.3	.008	+434	46	3,269
410	Sirkot (village).....	27.077	25	25	29.802	31.1	.033	+468	2,468	2,817

See Nos. 322, and 472 to 481 inclusive; also No. 522.

(a) C. O. at tent. See Nos. 411, 412, and 413.

(a) C. O. at Sirkot.

(a) C. O. at tent. See Nos. 411, 412, and 413.

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Barometer.	Thermometers.	Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Attached.	Detached.	Attached.	Detached.							
	Kuthoolee (village)	○	○	○	○	25.372	16.1 29.87	28.9	28.9	4,186	403	(a)
	Goarkhea-Khal	16.1	16.1	18.9	18.9	24.152	25.404	16.7	0.065	+1,328	98	C. O. at Kuthoolee.
	Boonga (tent)	18.9	18.9	26.130	29.765	18.9	25.404	16.7	0.011	3,345	337	(a)
	Soor-Khal	15.6	15.6	24.475	26.255	15.6	24.475	15.6	0.049	+1,763	164	C. O. at Boonga.
	Seemult (village)	22.2	22.2	25.624	29.6	21.7	29.744	28.3	0.062	-1,161	90	C. O. at Soor-Khal.
	Publee (tent)	21.7	21.7	24.220	27.2	27.2	29.802	29.4	0.032	5,320	567	5,387 See No. 448.
	Murora, Bidolee (Between villages)	27.2	27.2	25.77	22.2	22.2	29.87	29.4	0.011	3,778	456	4,234
	Tent 100 ft. above Tal (village)	22.2	22.2	25.69	8.3	8.3	25.771	27.8	0.029	3,899	417.5	4,316
420	Rultum (village)	12.8	12.8	26.058	12.2	12.2	25.771	22.2	0.066	+662	42.56	C. O. tent near Tal (a.)
	Koodh kee Sera, Ghat	19.4	19.4	25.420	21.1	21.1	29.854	22.2	0.051	-1,184.8	23.7	5,035 Do. (a.)
	Pang (Kumeen's house)	23.3	23.3	24.55	29.875	23.3	29.875	28.9	0.037	4,152	423.6	4,667
	Pinane (village)	13.9	13.9	24.512	13.3	13.3	24.626	23.3	0.046	5,086.5	566.4	5,653
	Boorkhina-Khal,	19.4	19.4	25.429	18.3	18.3	24.626	23.3	0.046	+72	5.5	{ C. O. at Pinane. Do. do.
	Ookal (village)	28.9	28.9	25.663	29.780	28.9	25.663	29.4	0.020	857	76.36	4,700
	Sunee (25 feet above village)	18.3	18.3	24.52	32.2	32.2	29.772	30	0.003	3,874	483	4,444
	Seewala (village)	32.2	32.2	26.548	25.782	25.2	25.782	14.4	0.052	+1,132	115.6	5,717 C. O. at Sunee.
	Singat Deo ke Sera	25.5	25.5	24.913	22.2	25.5	25.781	27.8	0.013	2,998.5	398.08	3,463 { C. O. camp near Mu-
	Sookhra (village)	17.2	17.2	25.208	16.1	16.1	25.782	12.8	0.011	+881	95	5,229 { tora. See No. 418.
	Than (village)	17.2	17.2	25.207	16.1	16.1	25.782	12.8	0.015	+602	36.2	4,884
	Rukkotee (village)	13.9	13.9	25.686	28.9	28.9	29.82	29.5	0.015	+603	36.2	4,886
	Boonga (village)	18.3	18.3	26.000	26.1	26.1	26.226	28.3	0.011	+214	24.5	4,379 { C. O. at Boonga camp. See No. 414.
	Water mill on Nyar R.	15.5	15.5	26.314	17.2	17.2	26.226	18.9	0.003	-91	7	3,655
430	Nae (village)	15.5	15.5	25.363	13.9	13.9	26.226	18.9	0.017	+554	58.46	4,686 Do. (a.)

Altitudes of Places and Stations in Kumaoñ, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet.	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Thermometers, Attached.	Thermometers.	Barometer.					
440	Doongree (village).....	23.604	20.5	°	29.708	27.2	°	0.034	3,838	377.2, 4,299 (a)
	Dang (village).....	25.774	26.7	29.716	27.8	27.8	0.006	3,702	429.764, 21.4 (a)	
	Mulound (village).....	25.198	15.5	25.774	26.7	26.7	0.056	+531	47.844, 805 (a)	
	Khundgaon (village).....	25.300	19.5	25.774	26.7	26.7	0.037	+445	40.5, 4,710 (a)	
	Bunas (village).....	25.214	12.8	24.330	21.7	21.7	0.044	-975	72.24, 819 (a)	
	Naor (45 ft. above the village).....	23.945	18.9	29.770	29.4	29.4	0.050	5,619	578.4, 6,197 (a)	
	Bureth (village).....	24.082	17.2	16.7	24.065	18.9	0.008	-277	1.426, 168 (a)	
	Tent near Sont.....	23.765	22.2	22.2	29.797	30.6	0.040	5,850	660, 6,640 (a)	
	Sont (village).....	23.930	19.4	18.9	23.748	20.5	0.05	205	15.3, 6,416 (a)	
	Koocholee (village).....	23.337	22.2	22.2	29.754	31.4	0.043	6,282	718.247, 0000 (a)	
450	Pute-Khal (the Puncchukee).....	22.768	17.8	16.7	23.456	22.2	0.020	+753	62.087, 832 (a)	
	Kirsal (the Puncchukee).....	24.944	21.7	21.7	29.754	31.4	0.048	4,544	514.1, 5,159 (a)	
	Tent 35 ft. above Puhlee (241 observation)	24.400	23.3	23.3	29.754	31.4	0.040	5,127	597.875, 839 (a)	
	Silolee (village), Choprakot Purguna .	25.000	27.8	27.8	29.754	31.4	0.018	4,517	571.285, 190 (a)	
	Molka-Khal	23.385	16.1	14.5	29.77	31.7	0.073	6,209	612.156, 958 (a)	
	Kolee (village).....	25.807	26.1	26.1	29.77	31.7	0.029	3,693	456.924, 233 (a)	
	Doongree (village).....	25.030	26.1	25	29.77	31.7	0.028	4,933	543.365, 137 (a)	
	Goor (village), 1st.....	24.524	24.5	24.5	29.77	31.7	0.035	5,014	601.345, 728 (a)	
	Ridge between Doongree and Goor.....	23.506	18.9	18.3	24.524	24.5	0.026	+1,076	98.446, 926 (a)	
	Nurkot (deserted village)	27.168	35.	35.	29.77	31.7	0.020	2,401	339.562, 795 (a)	
	Lojee (village)	26.096	24.1	20.	29.77	31.7	0.055	3,377	311.523, 823 (a)	
	Chutoora (20 ft. below the village)	25.862	31.7	31.7	29.777	31.7	0.000	3,673	497.694, 254 (a)	

The former observation gave 5,887 with best barometer. See No. 417.

C. O. at Goar.

C. O. at Dang.

Do.

C. O. at Puhlee. See No. 417.

Altitudes of Places and Stations in Kumaoñ, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer, Attached.	Thermometers, Centigrade.	Barometer.	Thermometers, Attached. Detached. Centigrade.					
460	Novasoo (village)	25.028	23.3	29.777	31.7	0	0	4,484	525.25	109
	Pokree (village)	25.314	26.7	29.777	31.7	0.025	0.025	4,205	525.6	835 (a.)
	Goar (24 ft. below village)	24.986	28.9	29.777	31.7	0.014	0.014	4,556	590.85	250 (a.)
	Boodeeso (village)	24.836	28.	24.986	28.9	0.004	0.004	+154	19.885	427 (a.)
	Byurnskot (30 ft. above village)	25.536	30.5	29.758	32.2	0.009	0.009	3,977	532.1	4,59 (a.)
	Koikree (village)	25.000	16.7	25.536	30.5	0.069	0.069	+482	47.2	139 (a.)
	Jhala (village)	25.444	19.5	18.3	25.586	30.5	0.056	+37	2,441	640 (a.)
	Koltha (village)	25.686	23.3	21.7	25.536	30.5	0.037	-190	20.884	384 (a.)
	Bhutolee (village)	26.278	33.3	33.3	29.758	32.2	0.007	3,246.5	451.26	3,772 (a.)
	Booganee (village)	26.874	19.5	26.278	33.3	0.060	0.060	+344	36.964	160 (a.)
470	Dewulgarh Temple	26.398	23.3	23.3	26.278	33.3	0.053	-171	22.643	574 (a.)
	Soomaree Hill	25.228	28.3	28.3	29.758	32.2	0.019	4,283	552.66	932 (a.)
	Juleetha (village)	25.664	22.8	21.7	25.228	28.3	0.028	-474	50.	4,398 (a.)
	Kholee (45 ft. above village)	26.772	26.7	26.7	29.753	32.2	0.029	2,727	341.043	129 (a.)
	Paocree Bungalow (10 days mean)	24.872	26.7	29.672	30.9	0.021	0.021	4,577	564.38	244 (a.)
	Do. (10 days mean)	24.806	25.5	29.588	31.3	0.029	0.029	4,563	553.8	219 (a.)
	Do. (10 do.)	24.790	25.5	29.625	30.8	0.026	0.026	4,615	550.76	270 (a.)
	Do. (10 do.)	24.700	22.8	29.722	29.2	0.031	0.031	4,790	533.	5,323
	Do. (15 do.)	24.704	23.3	29.673	30.8	0.037	0.037	4,737.5	548.1	286
	Do. (16 do.)	24.721	23.3	29.645	29.5	0.030	0.030	4,701.5	530.645	232
480	Do. (15 do.)	24.745	23.3	29.717	30.	0.033	0.033	4,736	539.985	276
	Do. (16 do.)	24.693	22.2	29.566	30.	0.038	0.038	4,652	518.395	170
	Do. (15 do.)	24.730	21.7	29.619	29.4	0.038	0.038	4,661	507.455	168
	Do. (15 do.)	24.812	20.	29.776	30.6	0.053	0.053	4,752	513.595	266

Best barometers. See Nos.

{ 322, 400, and 522.

Do.

Do.

Do.

Do.

Do.

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Absolute Altitude, in Feet.	Remarks.	
		Barometer, Attached.	Thermometers, Centi grade.	Barometer, Detached.	Thermometers, Attached, Detached, Centi grade.					
	Mean of the above.....	..	..	..	..	..	..	..	5,238
	Sreenugur (the Bungalow).....	27.948	30.	24.685	20.6	20.6	0.46	-3,186	344.081,708	
	Do. (same observation compared with Calcutta)	27.948	30.	29.75	31.1	31.1	0.06	1,623	210.451,833	
	Muletha (village)	27.818	30.	24.652	18.3	18.3	0.57	-3,089	309.161,839	
	Banga (village)	26.311	27.8	29.75	29.5	29.5	0.09	3,192	391.823,584	
	Teeargoon (village)	25.964	23.3	29.75	29.5	29.5	0.32	3,515	396.3,911	
	Chundurbudnue (tent) five days.....	23.318	19.5	19.5	29.797	28.9	0.44	6,340	653.4,6,993	
	Do. (tent) three days.....	23.306	20.	24.765	18.9	18.9	0.05	+1,587	129.986,955	
	Chundurbudnue Temple	23.024	15.6	15.6	23.399	18.9	18.9	0.15	+405	29.247,403
490	Nagnee-Danda	24.23	15.5	12.8	24.736	17.2	0.08	+520	33.5,801	
	Hoonkot Peak	24.96	18.3	16.7	24.759	17.8	0.02	-209	13.765,0.15	
	Deoprag (rope bridge)	28.343	26.1	26.1	24.800	18.3	0.19	1,280	152.9,1,433	
	The same compared with Paoree	28.343	26.1	26.1	24.777	21.7	0.22	-3,439	326.341,473	
	Kapur (village)	26.700	26.1	27.8	24.794	19.4	0.42	-1,925	196.3,117	
	Confluence of Nyar R. with Gauges R.	28.45	24.5	24.5	24.804	19.5	0.25	-3,540	356.361,342	
	Rhunaldoo (village)	26.345	26.1	26.1	24.833	18.9	0.36	-1,540	145.2,3,553	
	Deosee (village)	25.58	21.7	21.7	24.83	17.2	0.22	-732	62.084,424	
	Dharee (village)	28.007	24.5	24.5	29.91	27.8	0.18	1,696.5	187.921,894	
500	Filkhet (village)	26.158	22.8	22.8	24.861	15.	0.39	-1,285	103.953,849	
	Tent near Bucellee village	24.736	15.	13.3	26.208	21.7	0.6	+1,472	106.475,428	
	Dhour-Boonga Fort.....								Do. at Bucellee.	

Sreenugur (the Bungalow).....
Do. (same observation compared with Calcutta)

Muletha (village)

Banga (village)

Teeargoon (village)

Chundurbudnue (tent) five days.....
Do. (tent) three days.....

Chundurbudnue Temple

23.318

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Altitudes of Places and Stations in Kumaoñ, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.	
		Barometer, Attached, Centi grade.	Thermometers, Detached, Barometer, Centi grade.	Thermometers, Attached, Centi grade.	Detached, Centi grade.						
510	Bhutgaon Temple	25.540	20.°	24.840	13.9°	°	0.030	-6.93	50.7	4,494 C. O. at Paoree.	
	Bhudeer Ford, Nyar R.	27.936	11.7	25.540	20.	20.	0.046	-2.39	153.	1,943 Do. at Bhutgaon Temple.	
	Purolee (45 ft. above the village)	25.392	17.2	24.845	13.3	13.3	0.019	-5.48	134.	664,655 Do. at Paoree.	
	Dang (50 ft. below village)	25.960	21.1	21.1	24.878	12.8	0.041	-1.067	76.	654,095 Do. do.	
	Simtolee (50 ft. above village)	24.736	13.9	24.786	12.8	12.8	0.005	+58	2.985,	299 Do. do.	
	Lumkunnee Peak	24.823	19.5	24.850	13.3	13.3	0.031	+61	3.16.5,	302 Do. do.	
	Oophurasee Peak	25.541	21.7	21.1	24.823	19.5	18.3	0.011	-732	61.07.4, 509 Do. at Lumkunnee P.	
	Gungolee Ghat on Nyar R. (ford)	27.38	11.7	9.4	24.856	10.	10.	0.008	-2.512	104.	76.2, 621 Do. at Paoree.
	Masoff (village)	26.688	22.2	22.2	24.858	13.3	13.3	0.044	-1.805	136.	29.3, 296 Do. do.
	Punchoor Temple	24.608	13.3	13.3	24.807	12.8	12.8	0.002	+212	11.7	462 Do. do.
520	Durasoo (village)	25.236	20.	20.	24.838	13.3	13.3	0.033	-380	26.56.4,	831 Do. do.
	Guwanee (village)	25.852	21.1	21.1	24.872	13.3	13.3	0.039	-966	70.52.4,	201 Do. do.
	Gooradour-Khal.	24.142	11.1	9.5	24.888	13.9	13.9	0.013	+779	38.61.6,	056 Do. do.
	Deba (camp)	22.714	10.	10.	24.855	12.2	12.2	0.010	+2.336	111.	7,685 Do. do.
	Do. do.	22.692	11.7	11.1	24.820	12.8	12.8	0.005	+2.329	117.	81.7, 685 Do. do.
	Deba Temple	21.868	12.8	12.8	24.868	12.8	12.8	0.005	+3.350	183.	04.8, 771 Do. do.
	Do. do.	21.868	12.8	12.8	30.055	25.	25.	0.054	8.222.5	663.	39.8, 886 C. O. at Paoree.
	Ghunnee-Khal.	24.100	13.9	12.2	24.876	11.7	11.7	0.011	+837	42.	84.6, 118 Do. do.
	Tulaen village on Luthor R.	26.093	16.9	16.9	24.853	11.1	11.1	0.029	-1.239	74.	2.3, 925 Do. do.
	Liskot-Khal.	23.573	10.5	8.9	24.842	10.5	10.5	..	+1,366	56.	26.6, 650 See Nos. 322, 400, and Nos. 472 to 481 inclusive.
521	Paoree Bungallow (thirty days mean).	24.781	18.9	18.9	29.833	28.9	28.9	0.050	4.782	487.	56.5, 270 Bohwan Debee's Temple
	Bunduran (village)	25.518	17.2	17.2	30.082	22.8	22.8	0.029	4,258	364.	4,622 Mohan (30 ft. below the village)
	Do.	28.212	22.2	22.2	30.05	22.2	22.2	..	1,645	155.4	1,800 Dhekulee Guard Room
	Do.	28.528	20.5	20.5	30.05	22.2	22.2	0.010	1,346	121.41	1,467 Dhekulee Guard Room
	Do.	28.842	26.7	26.7	30.068	22.8	22.8	0.023	1,105	116.09	1,221 Dhekulee Guard Room

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet.	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Attached.	Thermometers.	Attached.					
530	Chilkeea Mundee	28.992	26.1	26.1	30.076	22.8	22.8	.020	974	102481, 076
	Huldooa	29.304	21.7	21.7	30.08	23.3	23.3	.009	672.5	65.25, 738
	Kasheepoor Bungalow (three days)	29.297	21.7	21.7	30.05	23.3	23.3	.010	652	63.
	Rampoor (city)	29.45	22.2	22.2	30.024	23.3	23.3	.006	499	47.67
	Peelieheet (twelve days mean)	29.464	18.3	18.3	30.075	21.7	21.7	.020	516.5	44.
	Bundra	29.312	26.1	26.1	29.97	22.8	22.8	.020	595	61.
	Biléthree Mundee	29.222	25.5	25.5	29.97	22.8	22.8	.016	672	69.89
	Choonapanee	28.446	23.9	23.9	29.97	23.9	23.9	*	1,361	138.621, 500
	Timia Fort	26.155	13.3	11.7	28.474	11.7	10.	.009	2,191	102.6, 3,821
	Kela Ghat	27.856	26.7	26.7	29.96	25.1	25.1	.010	1,907	209.792, 117
540	Buddees	26.122	18.9	18.9	29.99	25.1	25.1	.027	3,571	336.6, 3,908
	Kundulgaon (30 ft. below village)	24.844	15.5	15.5	29.97	26.7	26.7	.066	4,819	434.665, 254
	Lohoo-Ghat (Capt. M. Hastings's house)	24.507	12.2	12.2	29.94	25.5	25.5	.065	5,148	413.6, 5,562
	three days	24.174	10.	10.	29.84	27.2	27.2	.083	5,397	429.665, 827
	Phurka (Bungalow)	23.808	6.7	5.5	24.438	12.2	12.2	.026	6,652	26.046, 240
	Fort Hastings	23.402	7.2	7.2	29.964	24.5	24.5	.081	6,352	C. O. at Lohoo Ghat. (G. 6,742)
	Deo-Dhoora (Bungalow)	25.678	15.5	15.5	29.964	24.5	24.5	.046	3,976	340.
	Jamree (tent)	25.416	8.9	7.2	25.682	12.8	12.8	.020	+250	10.
	Darmee (village)	24.526	15.5	15.5	30.09	22.8	22.8	.036	5,290	433.925, 724
	Jak (80 ft. above village)	26.083	22.2	22.2	29.972	26.7	26.7	.023	3,599	377.3, 3,976
days		25.384	23.3	23.3	29.99	28.3	28.3	.025	4,350	477.3, 4,797
Dhamus (village)		26.334	25.	25.	29.97	29.5	29.5	.023	3,646	152.323, 798
Doba (50 ft. below village)		26.444	25.	25.	30.02	28.3	28.3	.017	3,288	372.4, 3,660
Manursa (100 ft. below village)										

{ See Nos. 139 to 145 inclusive.

See No. 594.

C. O. at Choonapanee.

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet.	Absolute Altitude, in Feet.	Remarks.
		Thermometers, Attched.	Barometer, Detached.	Thermometers, Attached.	Barometer, Detached.					
550	Nougaon (village).....	26.588	27.2	30.05	29.5	0	29.5	0	3,178	384.583, 563
	Kankuri Ghat Tree.....	26.900	27.8	26.588	27.2	0	27.2	0.012	3,204.543, 227	C. O. at Nougaon.
	Boojan (30 ft. below village).....	27.206	27.8	30.06	28.9	0.006	28.9	0.006	314.132, 903	
	Punt kee Peepul.....	27.458	27.8	30.04	28.9	0.006	28.9	0.006	2,336	
	Dubra (village).....	28.124	28.3	29.97	29.5	0.007	29.5	0.007	283.	
	Khyralee Peepul Tree.....	28.196	30.5	29.96	28.9	0.010	28.9	0.010	1,650	
	Kath kee Nao (tent) 4 days.....	23.477	25.5	20.895	29.5	0.020	29.5	0.020	4,146.5386.754, 633	
	Kath kee Nao (the fort).....	23.916	18.3	16.7	25.492	0.011	20.5	0.011	20.	
	Khutolee (village).....	26.136	25.	29.92	30.	0.026	29.92	0.026	4,972	
	Phutsoff (40 ft. below village).....	25.720	26.7	29.90	30.5	0.020	29.90	0.020	3,497	
	Cheonee.....	25.496	28.3	29.86	31.1	0.014	29.86	0.014	4,103	
	Tent near Choumoonu Temple (two days).....	24.199	26.1	29.84	30.5	0.021	29.84	0.021	5,437	
	Choumoonu Temple.....	23.904	18.3	17.2	24.106	0.022	18.3	0.022	6,094	
	Jyna (village).....	24.664	26.1	29.83	30.5	0.022	29.83	0.022	5,328	
	Mundulakot (village).....	25.418	28.3	29.83	30.5	0.011	29.83	0.011	5,917.135, 528	
	Poondalee (village).....	24.772	26.1	29.80	30.5	0.022	29.80	0.022	5,23.324, 682	
	25.438	23.9	23.860	28.9	0.025	23.860	0.025	5,793		
	Shir Temple (100 ft. above village).....	24.520	15.	13.9	25.486	0.038	25.486	0.038	4,151	
	Gadlee (30 ft. above village).....	25.096	22.2	29.87	28.3	0.030	29.87	0.030	4,507	
	Butoulea.....	24.268	22.8	29.88	28.9	0.030	29.88	0.030	5,388	
	Réonee Temple.....	23.672	18.3	16.7	24.198	0.013	24.198	0.013	4,539	
	Kaleemuth Tree.....	23.780	18.9	18.3	29.806	0.056	29.806	0.056	5,823	
	Bisflee Seera (30 ft. below village).....	26.105	31.1	29.87	31.1	0.005	29.87	0.005	3,511	
	Sooree Temple (at tent 40 ft. below).....	25.872	29.5	29.76	30.5	0.005	29.76	0.005	3,643	
									4,111	

{ C. O. at Butoulea. (G. 6,599.) See Nos. 69 and 85. See No. 733.

{ (G. 6,489.) See Nos. 69 and 85.

Altitudes of Places and Stations in Kumaoñ, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Attached, Detached, Centi grade.	Thermometers.	Attached, Detached, Centi grade.					
580	Nyathana Tree (three days)	24.435	26.1 °	29.817 °	31.1 °	0.024	5,161	629.2	5,790	(G. 5,857.)
	Kuthol Khét.	24.412	29.5 29.82	31.1 30.5	0.008 0.04	5,206	672.6	5,879		
	Dwarahath (the tank)	25.236	30.5 29.90	30.5 30.5	0.419 0.46	5,764	645.4	995		
	Dooda-gree Temple (two days)	23.092	20.5 29.857	30.5 30.5	0.046	6,643	724.2	7,367	(G. 7,344.)	
	Punchukke at junction of Koثار N. with Ramgunga R.	26.696	33.9 29.857	30.5 30.5	0.020	2,933	405.7	2,339		
	Turag Tal	26.068	31.1 29.79	30.5 30.5	0.004	3,482	458.3	3,941		
	Loba (tent) two days.	24.953	32.2 29.735	31.1 31.1	0.007	4,575	619.36	5,194		
	Loba Gurhee.	23.946	21.7 25.000	27.2 26.7	0.026	+1,094	112.33	6,401	C. O. at tent (G. 6,430.)	
	Rhétée-Maisée (large mulberry tree on Khétée R.	24.996	28.3 29.77	31.1 31.1	0.014	4,540	576.18	5,116		
	Dewalee-Khal.	23.186	12.2 24.996	28.3 28.3	0.074	+1,876	152.8	7,145	C. O. at Khétée-Maisée.	
590	Kafisooa (tent about 150 ft. below village)	25.832	32.8 29.84	31.1 31.1	0.010	3,767	510.4	4,277		
	Adh.Bhudree Temple.	25.888	18.3 25.862	29.5 28.3	0.058	-85	6,994	1,185	C. O. at Kafisooa tent.	
	Notee Temple	24.704	29.4 29.79	31.1 31.1	0.008	4,871	631.18	5,502	See No. 643.	
	Jak (village)	25.372	32.2 29.76	31.1 31.1	0.007	4,162	562.18	4,724		
	Bhugalee (about 100 ft. below village)	23.624	25.5 29.70	31.7 31.7	0.029	5,933	726.14	6,659		
	Goor Choura	23.700	26.1 29.76	31.1 31.1	0.023	5,908	720.72	6,629		
	Tilkhunee-Khal	22.114	13.3 23.834	23.9 23.3	0.047	+1,896	141.75	8,707	C. O. at Goor-Choura (a.)	
	Dobree (village 50 ft. below Copper Mine)	22.698	13.3 22.114	13.3 11.7	..	-679	35.38	7,979	{ C. O. at Tilkhunee-Khal (the Copper Mine about 50 ft. higher.) (a.)	
	Roodurpoor (three days)	29.395	20. 30.067	22.2 22.2	.013	577	53	630	{ This observation from Mr. Tate's Field Book.	

Altitudes of Places and Stations in Kumaoñ, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer	Thermometers, Attached, Detached, Centi grade.	Thermometers, Attached, Detached, Centi grade.	Barometer					
		o	o	o	o					
		29.476	17.2	29.986	18.9	.010	438	32	470	
	Barely (fourteen days)	29.482	18.3	30.04	20.	.010	479	38	517	This observation from Mr. Tate's Field Book. See No. 531.
	Pèlesbheet (three days)	29.402	18.9	30.11	20.5	.009	612	51	663	See No. 133.
	Nanukmuth (two days)									
	Kaldoonga, (village, 50 ft. above Ghagra R.)	28.932	23.9	30.07	21.7	.013	1,017	981	1,115	
	Dhurn Ghat, on Kalee R. (?)	28.600	22.8	29.93	26.1	.019	1,167	1221	1,289	
	Joola Ghat, ditto.	28.276	23.9	30.09	22.8	.007	1,627	1611	1,788	
600	Junction of Gore and Kalee Rivers	28.01	22.8	30.02	27.2	.025	1,782	1901	1,972	
	Pethora, Gurh	24.813	20.	30.05	29.5	.047	4,941	5215	4,462	
	Ram Ghar (store room)	25.190	21.1	29.87	29.5	.042	4,397	4764	4,873	
	Tamlee Peplu Tree	26.055	18.3	29.97	26.7	.044	3,604	3463	3,950	
	Birhum Deo (garden room) two days	29.208	19.5	30.06	22.8	.019	733	65	798	Mr. Tate's observations end.
	Dharae (village)	27.855	28.3	29.97	30.6	.013	1,895	2342	129	
	Rope Bridge on Ganges R. near do.	27.920	25.6	27.762	27.8	.006	-153	41,969	(a) C. O. at Dharae.	
	Banshee (village)	26.554	24.4	23.9	29.97	.026	3,128	3643	4,462	
	Doongra Rice Fields	26.456	24.4	23.9	29.97	.026	3,224	3673	5,591	
	Choura Khal.	25.104	16.1	14.4	26.580	16.1	14.4	+1,489	915,093	(a) C. O. at Banshee.
	Kanda (village)	26.648	25.6	25.	29.94	29.4	.020	3,015	3513,366	(a) C. O. at Kanda.
610	Ghengur Khal, or Mol Khal, 60 ft. above junction Gudhooole and 20 ft. below Agustmonde Temple	25.030	17.8	16.7	26.684	25.6	23.9	+1,628	1405,169	(a) C. O. at Kanda.
	Mundagene Rivers	27.527	26.1	26.1	29.96	29.4	.018	2,190	259,2,449	
	100 feet below Kundara.	27.428	23.3	23.3	29.98	29.4	.034	2,286	255,2,541	
	Naluhpuntun (tent)	25.898	23.9	22.8	29.96	29.4	.029	3,768	4184,4,186	
	Do. (station)	24.890	19.4	18.9	25.250	20.	.003	4,479	4834,962	
								+371	315,372	(a) C. O. at Naluhpuntun

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet, +	Absolute Altitude, in Feet.	Remarks.
		Barometer, Attached.	Thermometers, Centigrade.	Barometer, Detached.	Thermometers, Attached. [Detached, Centigrade.					
620	Gooput-Kasee Temple	25.584	16.7 °	15.6 °	25.320	19.4 °	18.3 °	0.14	-285	20 4,651 (a.) Do.
	Naluhputun Temple	25.532	19.4 °	18.3 °	25.292	20.6 °	20.6 °	.006	-284	23 6,649 (a.) Do. See No. 234.
	Parkundee (camp)	25.61	22.2 °	22.2 °	29.98	28.9 °	28.9 °	.034	-4,070	4,511 See No. 620.
	Ookee Math, or Oolkee Math	25.830	13.3 °	13.3 °	23.682	20 °	20 °	.035	-185	13 4,309 (a.) C. O. at Camp. See No. 235.
	Parkundee (village)	25.564	11.7 °	10.6 °	25.616	11.7 °	10 °	..	+53	1 4,566 (a.) Do. See No. 618.
	Julhee (village)	25.918	12.8 °	12.2 °	25.616	11.7 °	10 °	.006	-299	13 4,193 (a.) Do.
	Jigroth (about 120 ft. below village)	25.193	21.7 °	21.7 °	30.02	28.9 °	28.9 °	.036	-4,530	491 5,021
	Oorkolee (village)	24.680	22.2 °	22.2 °	30.02	28.9 °	28.9 °	.033	5,070	553 5,623
	Baweh (about 140 ft. above village)	25.498	20.6 °	20.6 °	30.07	29.4 °	29.4 °	.045	4,251	455 4,706
	Seopoor (30 ft. above village)	25.686	21.1 °	21.1 °	30.03	30 °	30 °	.045	4,026	440 4,466
630	Chondee (village)	26.042	21.7 °	21.7 °	30.06	29.4 °	29.4 °	.040	3,699	404 4,103
	Chondee (village)	23.375	15.6 °	15.6 °	29.98	28.9 °	28.9 °	.063	6,414	608 7,022
	Chondee (village)	22.776	13.9 °	11.7 °	23.522	17.2 °	15 °	.015	+823	47 7,909 (a.) C. O. at Tent. See No. 303.
	Bannu-Thula (30 ft. above village)	25.401	17.8 °	17.8 °	29.97	30 °	28.9 °	.062	4,247	433 4,680
	Gogoulee (30 ft. below village)	24.406	17.2 °	16.1 °	30.06	29.9 °	28.9 °	.057	5,369	515 6,002 (a.)
	Alee (village)	25.008	16.7 °	16.1 °	30.07	29.4 °	29.4 °	.063	4,738	471 5,313 (a.)
	Masoni (village)	24.62	16.7 °	15.6 °	30.13	29.4 °	29.4 °	.062	5,197	499 5,810 (a.)
	Agur Peak	27,213	22.8 °	22.2 °	30.13	28.3 °	28.3 °	.030	2,624	282 2,964 (a.)
	Nund, Prag	27.262	16.1 °	14.4 °	27.124	18.9 °	18.3 °	.015	-146	10 2,805 (a.) C. O. at Masoi. See No. 164.
	Butcher (village)	24.728	17.8 °	17.8 °	30.09	26.7 °	26.7 °	.044	5,068	480 5,548
	Booransee Peak	22.118	7.2 °	6.1 °	24.768	19.4 °	18.3 °	.054	+2,885	150 8,644 (a.) C. O. at Bucher.
	Gapeur (tent)	25.315	18.3 °	18.3 °	30.10	26.1 °	26.1 °	.045	4,466	422 4,888

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barom.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet.	Absolute Altitude, in Feet.	Remarks.
		Barometer.	Thermometers. Attached, Detached, Centigrade.	Thermometers, Attached, Detached, Centigrade.						
640	Gopeshwar Temple.....	25.392	15.6 °	13.9 °	25.318	15.6 °	°	-7.5	4	4,807 (a.) C. O. at Tent. See Nos. 212 and 293.
	Peepulkotee (Peepul Tree).....	25.841	17.8 °	17.8 °	30.11	25.6 °	0.42	3,942	365	4,307 See Nos. 244 and 290.
	Doongree (village).....	25.082	18.3 °	17.8 °	30.11	26.7 °	0.42	4,717	448	5,268 (a.) See No. 291.
	Junction of Bichei Gunga.....	26.612	15.6 °	14.4 °	25.830	16.1 °	0.03	-780	50	3,460 (a.) C. O. at Peepulkotee.
	Bydana (Peepul Tree).....	27.354	18.9 °	18.9 °	30.04	25. °	0.34	2,379	221	2,652 (a.)
	Kurn Prag. Tent (about 50 ft. above Spar Bridge).....	27.512	17.2 °	17.2 °	30.015	24.4 °	24.4 °	2,231	200	2,480 (a.) See Nos. 165 and 149.
	Noote Temple.....	24.752	12.8 °	12.8 °	30.03	23.9 °	0.55	4,977	390	5,369 See No. 386.
	Upper Pindooabhee (30 ft. below village).....	23.909	13.9 °	12.8 °	30.02	23.9 °	0.48	5,878	459	6,337 (a.)
	Koochollee (village).....	23.462	15.6 °	13.9 °	30.05	23.9 °	0.39	6,405	516	7,059 (a.)
	Ootelgudhree-Khal.....	21.368	3.9 °	3.9 °	23.392	15.6 °	13.9 °	0.50	+2,296	87 (a.) C. O. at Koochollee.
	Murora (about 100 ft. below village).....	24.152	16.7 °	16.7 °	30.06	23.3 °	0.25	5,664	484	6,148 (a.)
	Chak-Khal.....	22.524	11.1 °	10.6 °	24.234	16.7 °	0.25	+1,877	109	8,273 (a.) C. O. at Murora Tent. See No. 332.
	24.276	16.1 °	16.1 °	30.08	23.3 °	0.35	5,549	467	6,016 (a.)	
	Kunoor (lowest house).....	24.130	14.4 °	12.8 °	24.364	16.1 °	0.08	+242	14	6,277 (a.) C. O. at Kunoor.
	Rundola Ghat on Sanee R. (or ford).....	25.324	3.3 °	3.3 °	24.364	16.1 °	0.60	-1,669	44	4,881 (a.)
	Meidhar (tent about 200 ft. below village).....	24.676	17.8 °	17.8 °	30.07	22.8 °	0.24	5,126	445	5,682 (a.)
	Lower Byrgaon (village).....	25.212	16.1 °	16.1 °	30.07	23.3 °	0.36	4,554	384	5,037 (a.)
	Oporen-Khal.....	24.000	12.2 °	11.1 °	25.142	16.1 °	0.19	+1,191	69	6,322 (a.)
	Chukurgoon (30 ft. below village).....	25.052	16. °	16. °	30.01	23.3 °	0.36	4,669	390	5,059 (a.)
	Jooncea (40 ft. below village).....	24.110	16.1 °	15.6 °	30.025	22.8 °	0.32	5,683	467	6,150 (a.)
	Do. Fort.....	23.568	5.6 °	3.3 °	24.156	15.6 °	14.4 °	-0.47	+590	21 6,773 (a.) C. O. at Tent.
	Mason (about 80 ft. below village).....	25.538	10. °	10. °	30.10	22.8 °	0.14	4,269	379	4,741 (a.)
	Muthela (40 ft. above Sanee R.).....	25.936	17.2 °	16.7 °	30.07	22.8 °	0.29	3,824	321	4,145 (a.)
	Juvaae (village).....	25.430	12.8 °	11.1 °	25.862	11.7 °	10.6 °	+445	19	4,618 (a.)
	Sookhnae (village).....	25.482	12.8 °	11.7 °	25.862	11.7 °	10.6 °	-0.06	+392	19 4,564 (a.)

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations,

No.	Place of Observation.	Observation.		Comparison.		Equation for Expansion + to coldest Barometer.	Approximate Altitude, in Feet.	Equation for Temperature, in Feet.	Absolute Altitude, in Feet.	Remarks.
		Barometer, Attached.	Thermometers, Detached.	Barometer, Attached.	Thermometers, Detached.					
670	Séra (village)	26.096	16.1 15.6 °	30-10	22-2 °	0.032	3,688	297	3,985	C. O. at Séra.
	Bungar (village)	26.086	13.9 12.2 15.6	26-12-4	16-1 15.6 22-2	0.011	3,627	1	4,013 (a.)	
	Choundul (60 ft. below village)	25.802	16.7 15.6 13.9	30-07	22-2 22-8	0.029	3,959	319	4,363 (a.)	
	Pukholee (village)	25.856	13.9 13.9 13.9	30-06	22-8	0.047	3,879	304	4,266 (a.)	
	Deokhar (30 ft. above village)	25.370	13.9 13.9 13.9	30-07	23-3 23-3	0.048	4,379	348	4,633 (a.)	
	Bhoun (30 ft. below village)	25.57	13.3 13.3 13.3	30-06	21-7	0.043	4,172	313	4,574 (a.)	
	Putthotee (40 ft. below village)	26.216	15.6 15.6 15.6	30-08	21-7 21-7	0.032	3,551	283	3,911 (a.)	
	Loéntee	27.252	17.2 16.1 16.1	30-06	20-6 20-6	0.019	2,337	355	2,889 (a.)	
	Confluence Kulae and Mundal Rivers	28.236	15.6 15.6 15.6	30-06	20-0 20-0	0.025	1,608	121	1,763 (a.)	
	Duhurgao (about 80 ft. below village)	26.460	15.6 15.6 15.6	30-11	20-0 20-0	0.023	3,344	255	3,670 (a.)	
	Seerana (60 ft. below village)	25.684	16.7 15.6 15.6	30-08	18-9 18-9	0.011	4,106	301	4,495 (a.)	
	Kole (70 ft. below village)	25.72	15.6 15.6 15.6	30-05	18-3 18-3	0.014	4,040	292	4,419 (a.)	
	Conéree (30 ft. below village)	25.486	14.4 13.9 13.9	30-06	18-9 18-9	0.023	2,278	300	4,578 (a.)	
	Muneargoon (about 90 ft. below village)	25.26	14.4 13.3 13.3	30-07	20-0 20-0	0.029	4,512	320	4,832 (a.)	
	Usankhet (about 120 ft. below village)	26.506	14.4 13.9 13.9	30-11	19-4 19-4	0.026	3,296	234	3,601 (a.)	
	Choondae (about 100 ft. below village)	27.082	14.4 13.9 13.9	30-12	19-4 19-4	0.027	2,744	194	2,997 (a.)	
680	Soormaree (about 80 ft. below village)	26.683	16.1 16.1 16.1	30-12	19-4 19-4	0.018	3,139	239	3,445 (a.)	
	Seela (village)	26.974	16.1 16.1 16.1	30-14	20-6 20-6	0.024	2,869	223	3,092 (a.)	
	Danda-Mundee	27.30	17.2 17.2 17.2	30-13	21-7 21-7	0.025	2,546	210	2,811 (a.)	
	Bureth (about 100 ft. below village)	25.918	15. 15. 15.	30-13	22-2 22-2	0.037	3,886	309	4,278 (a.)	
	Chopura (flower village)	27.509	17.2 17.2 17.2	30-15	23-3 23-3	0.034	2,357	202	2,610 (a.)	
	Do. (upper village)	26.456	11.7 11.7 11.7	27-372	15. 15.	0.017	+870	48	3,546 (a.)	
	Timlee	27.182	17.8 17.8 17.8	30-11	23-9 23-9	0.033	2,634	233	2,924 (a.)	
	Kuthoor	26.158	15.6 15.6 15.6	30-11	23-3 23-3	0.040	3,626	301	4,005 (a.)	
	Junction of Timlee and Heona Rivers (tree)	28.222	8.9 8.9 8.9	26-088	15.6 15.6	0.038	-2,084	106	1,772 (a.)	C. O. at Kuthoor.

Altitudes of Places and Stations in Kumaon, deduced from Barometrical Observations.

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		Barometer.	Attached.	Detached.	Centigrade.				
690	Ghunsale (25 ft. above village)	25.698	14.4	30.10	°	23.3	°	•045	4,490 (a)
	Tole-Khal	25.266	14.4	23.628	14.4	14.4	14.4	+370	4,390 (a)
	Bhunole	25.602	15.	30.08	23.3	23.3	•042	4,578 (a)	
	Kothar	26.230	13.3	25.532	15.	13.9	•009	-712	3,810 (a)
	Saor (about 60 ft. below village)	26.242	16.7	30.06	23.9	23.9	•038	3,502	3,806 (a)
	Keecha-Gurhee	23.974	10.	30.08	23.9	23.9	•067	5,840	4,23 (a)
	Bursoree (30 ft. below village)	25.642	16.7	15.	30.08	23.9	•037	4,122	4,463 (a)
	Oolna (30 ft. below village)	26.288	15.	30.07	23.9	23.9	•047	3,455	287 (a)
	Murora Ghat on Nyar R.	28.448	13.9	26.218	15.	15.	•006	-2,133	1,511 (a)
	Objargaoon	26.282	17.2	17.2	30.05	23.9	•036	-3,455	3,833 (a)
700	Bungaon	25.157	15.	29.98	23.9	23.9	•045	4,524	374 (a)
	Binsur-Khal	24.262	11.1	10.6	25.104	16.7	16.7	•027	5,860
	Musangaoñ (60 ft. above village)	25.732	13.3	13.3	29.97	23.9	•055	3,918	50 (a)
	Kanda	25.442	10.	9.4	29.94	23.3	23.3	•068	4,400
	Kot	25.450	9.4	9.4	25.372	10.	9.4	•003	282 (a)
	Khola	25.078	10.	10.0	29.95	23.3	23.3	•066	4,312 (a)
	Kuthoor	25.314	6.7	5.6	25.008	10.	10.	-335	4,980 (a)
	Simna	25.632	12.8	12.2	30.00	22.8	22.8	•051	4,627 (a)
	Sulda (about 100 ft. below village)	25.662	13.9	13.9	30.10	21.7	21.7	•040	303 (a)
	Mujeen Temple	26.514	19.4	19.4	30.05	21.7	21.7	•012	4,439 (a)
710	Keark Temple	25.526	19.4	19.4	30.01	21.1	21.1	•009	4,519 (a)
	Kalofgaon	25.07	22.8	21.1	30.01	26.7	26.7	•019	283 (a)
	Putaootea (on Kal-Gudh R.)	24.67	21.7	20.	30.01	26.7	26.7	•024	3,604 (a)
	Guderee (about 160 ft. below village)	25.004	22.8	21.7	30.02	27.2	27.2	•022	4,326 (a)
	Guderee-Khal	22.714	16.1	13.3	24.934	22.8	21.7	•030	337 (a)
	Chumnaon	25.38	20.	20.	30.00	27.8	27.8	•040	4,247 (a)
	Kanda	26.096	23.9	23.9	30.03	29.4	29.4	•029	4,123 (a)

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